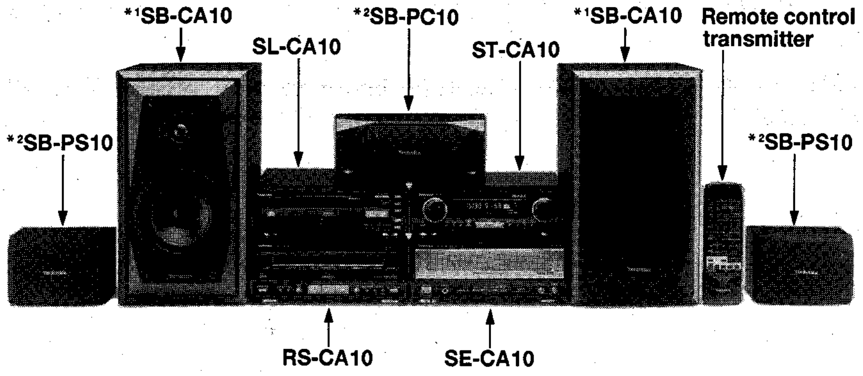
ORDER NO. AD9512271C8

# Service Manual

Cassette Deck

# RS-CA10

Cassette deck *DOLBY SYSTEM



**Colour**

(K)...Black Type

**Area**

| Suffix for Model No. | Area | Colour |
|---|---|---|
| (E) | Europe, Asia, Latin America, Middle East, Africa and Oceania | (K) |

**System: SC-CA10**

**Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.**

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY", and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

## AR-1 MECHANISM SERIES

## ■SPECIFICATIONS

| | |
|---|---|
| **Deck system** | Stereo cassette deck |
| **Track system** | 4 track, 2 channel |
| **Recording system** | AC bias |
| **Bias frequency** | 100kHz |
| **Erasing system** | AC erase |
| **Heads** | |
| **Deck 1** | |
| **(Playback head)** | Permalloy head |
| **Deck 2** | |
| **(Recording/ Playback head)** | Permalloy head |
| **(Erasing head)** | Double gap ferrite head |
| **Motors** | |
| **Deck 1,2** | |
| **Capstan drive** | DC servo motor |
| **Reel table drive** | DC motor |
| **Tape speed** | 4.8 cm/s |
| **Wow and flutter** | 0.1% (WRMS) |
| **Fast forward and rewind times** | Approx. 52 seconds with C-60 cassette tape |
| **Frequency response** | |
| **(Dolby NR off)** | |
| **NORMAL** | 20Hz - 17kHz (DIN) |
| **CrO2** | 20Hz - 17kHz (DIN) |
| **METAL** | 20Hz - 17kHz (DIN) |
| **S/N (Signal level=max recording level, $CrO_2$)** | |
| **NR off** | 56dB (A weighted) |
| **Dolby NR B on** | 66dB (A weighted) |
| **Dolby NR C on** | 74dB (A weighted) |
| **Input sensitivity and impedance** | |
| **REC (IN)** | 400mV/ 23kΩ |
| **Output voltage and impedance** | |
| **PLAY (OUT)** | 280mV/ 220Ω |

**■ General**

| | |
|---|---|
| **Dimensions (WxHxD)** | 280x118.5x265 mm |
| **Weight** | 2.5 kg |

Notes:

1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

| System | Tuner | CD changer | Amplifier | Cassette deck | Speakers |
|---|---|---|---|---|---|
| **SC-CA10** | ST-CA10 | SL-CA10 | SE-CA10 | **RS-CA10** | *1 SB-CA10 (Front)<br>*2 SB-PC10 (Center)<br>(SB-PC10+SB-PS10) |

*1 Made in PAES
*2 For (E, EB, EG) areas.....Made in PAES
For (GC, GN) areas.....Made in NABEL

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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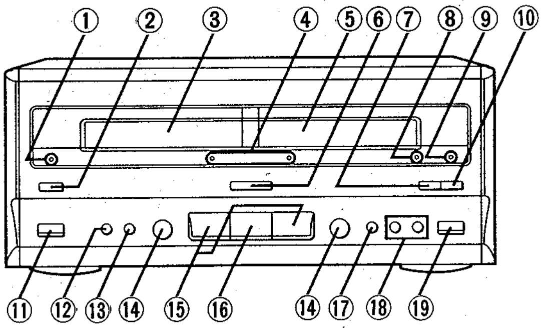
**NOTE:**
Refer to the service manual for Model No. SE-CA10 (ORDER No. AD9512272C8) for information on “ACCESSORIES”, “INSTALLATION ”, “CONNECTIONS” and “PACKAGING”.

# ■FRONT PANEL CONTROL



① Deck 1 indicator (DECK 1)
② Deck 1/deck 2 select button (DECK 1/2)
③ Deck 1 cassette holder
④ Fast forward/rewind indicators (HIGH SPEED FF/REW)
⑤ Deck 2 cassette holder
⑥ TPS skip button (TPS SKIP)
⑦ Counter reset button (RESET)
⑧ Record pause indicator (REC PAUSE)
⑨ Deck 2 indicator (DECK 2)
⑩ Counter display button (DISPLAY)
⑪ Deck 1 cassette holder open/close button (▲ OPEN/CLOSE)
⑫ Dolby noise reduction button (DOLBY NR)
⑬ Reverse mode select button (REV MODE)
⑭ Fast forward/rewind/tape program sensor buttons (◀◀ [TPS], ▶▶ [TPS])
⑮ Playback buttons and indicators (◁, ▷)
⑯ Stop button (□)
⑰ Record pause button (● REC PAUSE)
⑱ Tape edit buttons (TAPE EDIT, NOR, HIGH)
⑲ Deck 2 cassette holder open/close button (▲ OPEN/CLOSE)

# OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

**NOTE**

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

## • Contents

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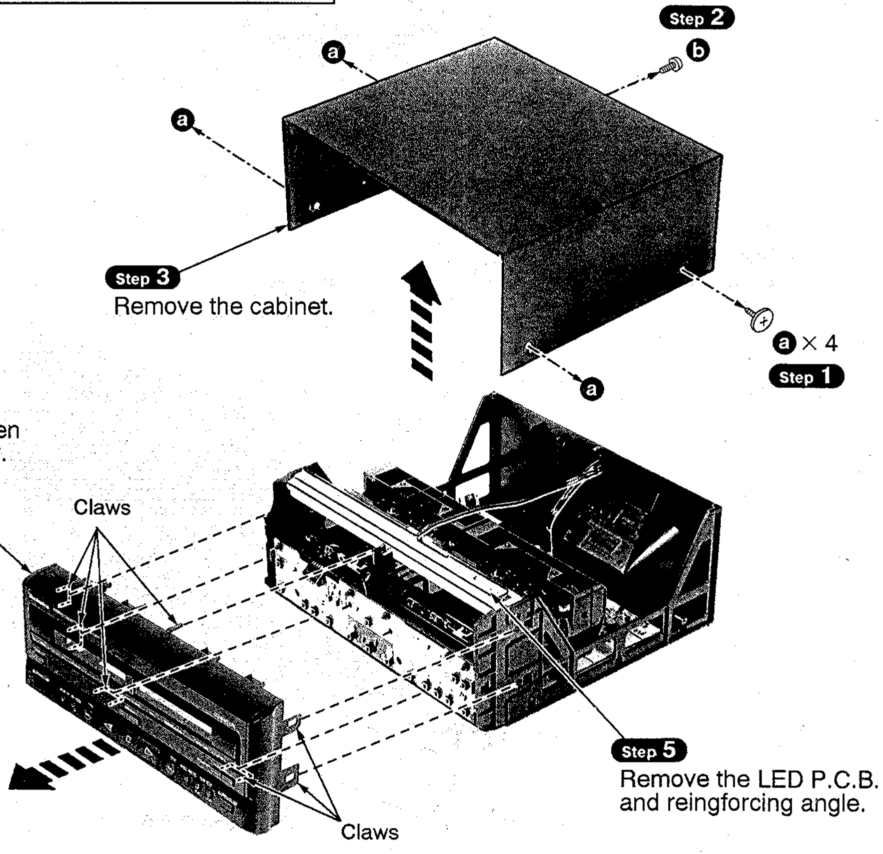
**•Main Component Replacement Procedures**

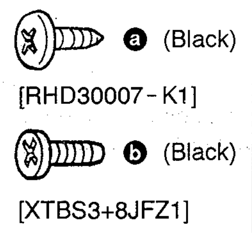
1. Replacement for the cassette holder ass'y. •••••••••••••••••••••••••••••••••••••••••••• 5~7.
2. Replacement for the belt, reel motor ass'y and capstan motor ass'y. •••••••••••••••••••••••••••••• 7~9.
3. Replacement for the parts mounted on mechanism P.C.B. and solenoid. •••••••••••••••••••••••••• 9,10.
4. Replacement for the head block and pinch roller ass'y. •••••••••••••••••••••••••••••••••••••• 10.

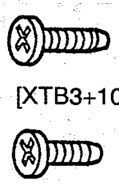
## Checking Procedure for each P.C.B.

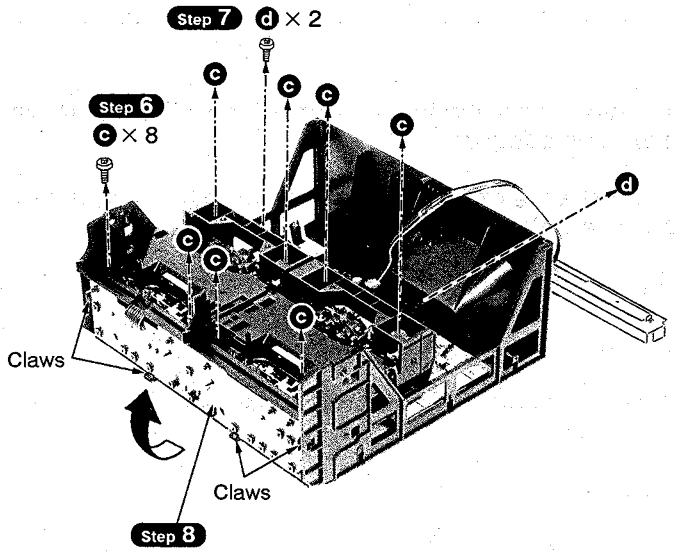
### 1. Checking for the main P.C.B. and operation P.C.B.


Step 2
b
a
a
Step 3
Remove the cabinet.
a × 4
Step 1
a
Claws
Step 5
Remove the LED P.C.B. and reingforcing angle.
Claws

**Step 4**
Release the 7 claws, and then remove the front panel ass'y.

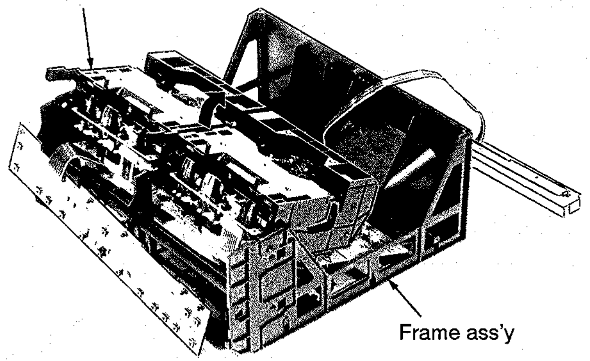

a (Black)
[RHD30007-K1]
b (Black)
[XTBS3+8JFZ1]


c (Black)
[XTB3+10JFZ]
d (Black)
[XTBS3+8JFZ1]


Step 7
d × 2
Step 6
c × 8
c
d
Claws
Claws

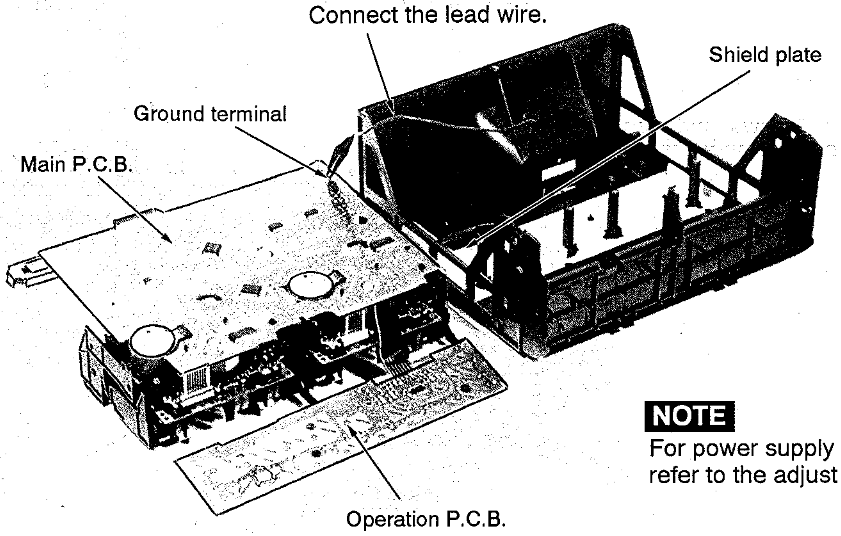
**Step 8**
Release the claws, and then remove the operation P.C.B..

**Step 9**
Remove the mechanism ass'y and main P.C.B. from the frame ass'y.



- **Check the main P.C.B. and operation P.C.B. as shown below.**

**Step 10**
Connect the lead wire.

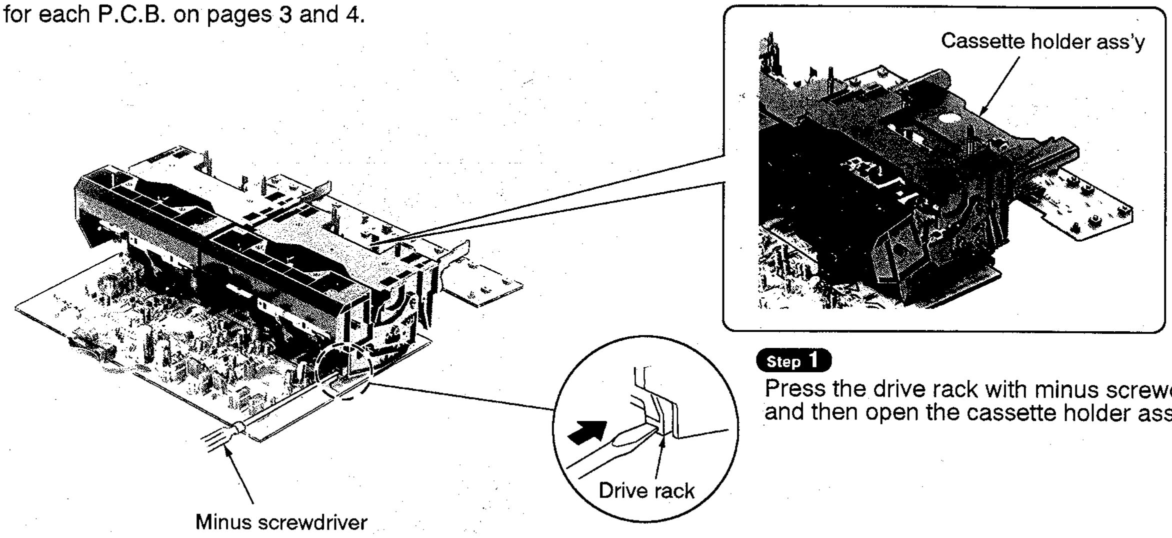

Shield plate
Ground terminal
Main P.C.B.
Operation P.C.B.

**NOTE**
For power supply and test points shorting, refer to the adjust procedures on page 12.

# Main Component Replacement Procedures

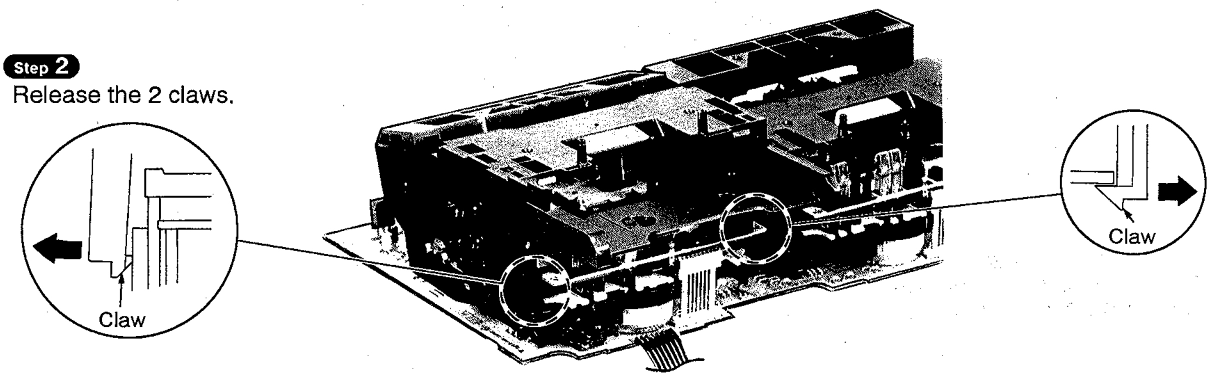
## 1. Replacement for the cassette holder ass'y

- Follow the ( **Step 1** ~ **Step 9** ) of the item 1 in checking procedure for each P.C.B. on pages 3 and 4.

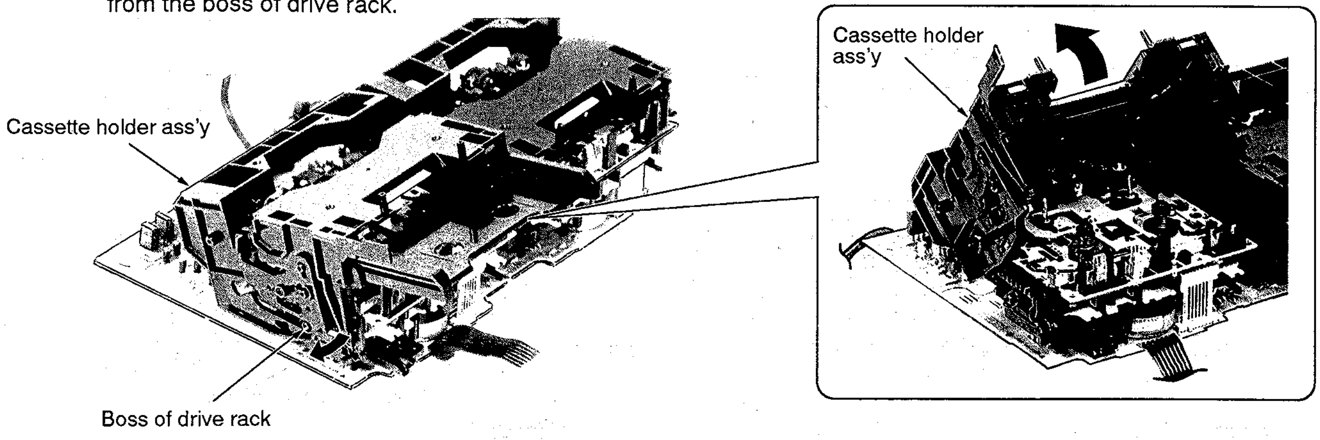

Cassette holder ass'y
Drive rack
Minus screwdriver

**Step 1**
Press the drive rack with minus screwdriver, and then open the cassette holder ass'y.

**Step 2**
Release the 2 claws.

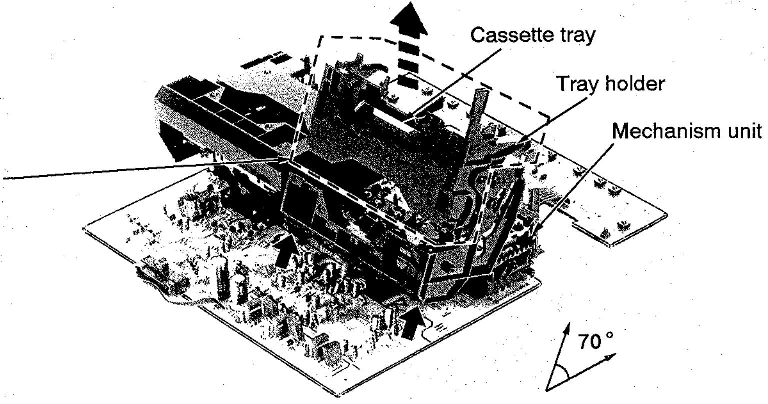


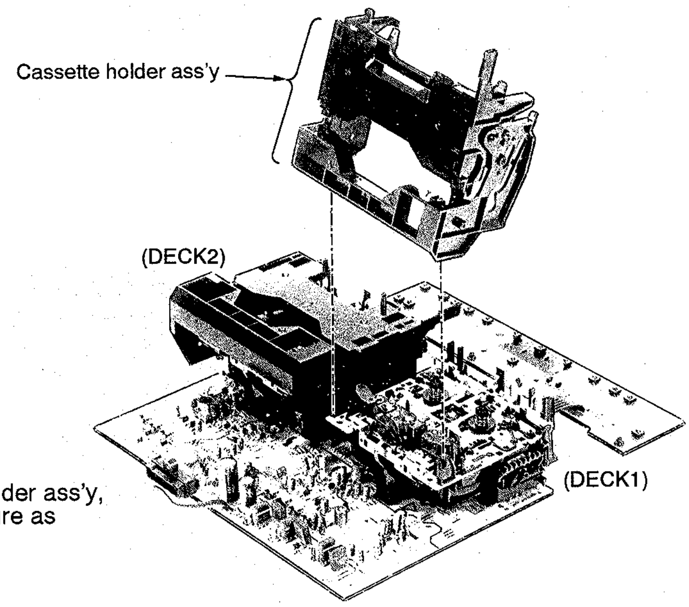
**Step 3**
Remove the cassette holder ass'y from the boss of drive rack.


Cassette holder ass'y
Boss of drive rack
Cassette holder ass'y

**Step 4**
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then pull out the cassette holder ass'y.

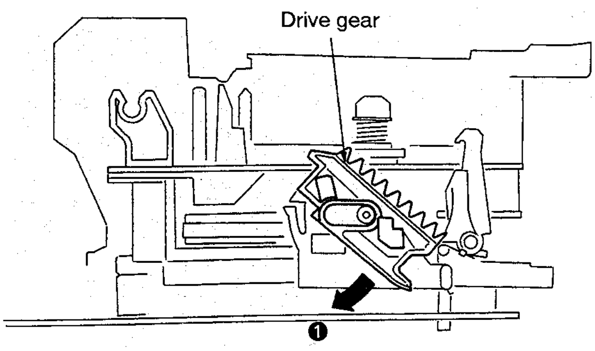
**NOTE**
When removing the cassette holder ass'y, avoid to pull it with holding cassette tray or tray holder.


Cassette tray
Tray holder
Mechanism unit
70 °

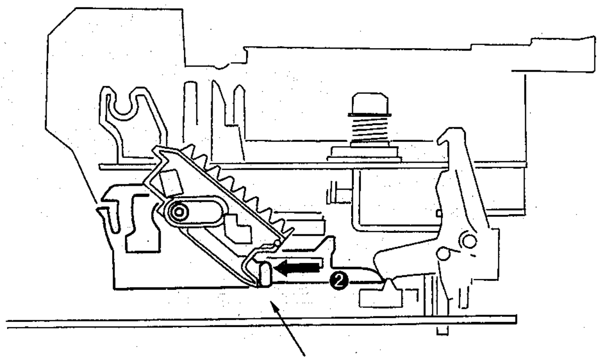

Cassette holder ass'y
(DECK2)
(DECK1)

※ For DECK2 cassette holder ass'y, follow the same procedure as DECK1 cassette holder.

## Installation of the cassette holder ass'y after replacement

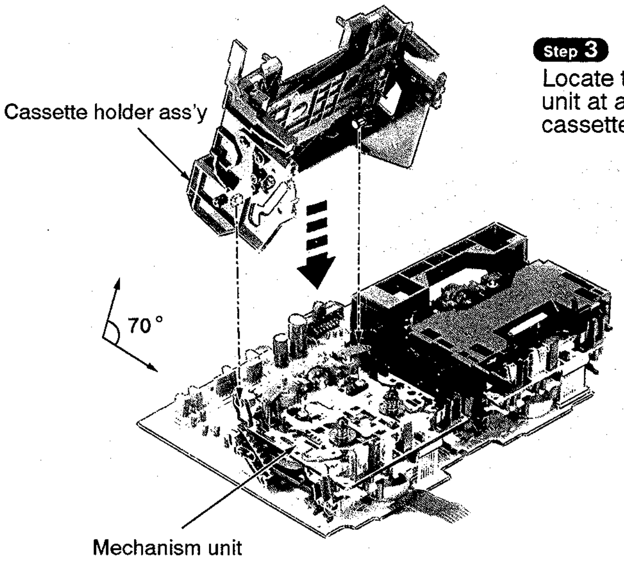

Drive gear
❶

**Step 1**
Tilt the drive gear in the direction of arrow ❶.

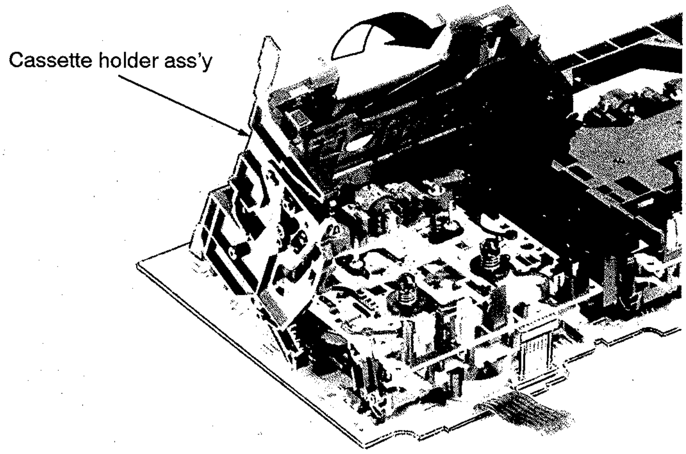


※ Force this point of drive rack.

**Step 2**
Force the drive rack fully in the direction of arrow ❷.



**Step 3**
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then install the cassette holder ass'y.

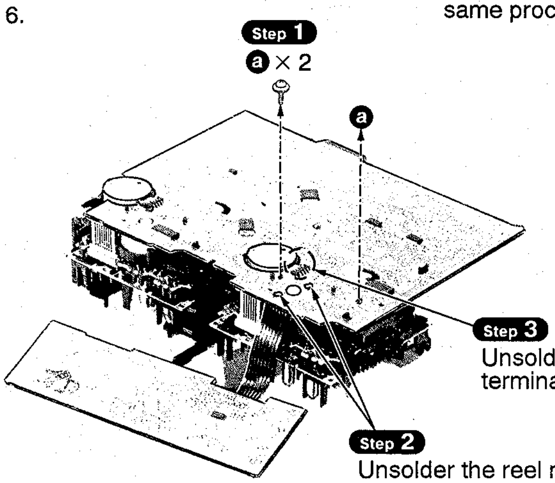


**Step 4**
Tilt the cassette holder ass'y in the direction of arrow, and then secure it to the mechanism ass'y.

## 2. Replacement for the belt, reel motor ass'y and capstan motor ass'y

- Follow the item 1 ( **Step 1** ~ **Step 9** ) in checking procedure for each P.C.B. on pages 3 and 4.
- Follow the item 1 ( **Step 1** ~ **Step 4** ) in main component replacement procedures on pages 5 and 6.

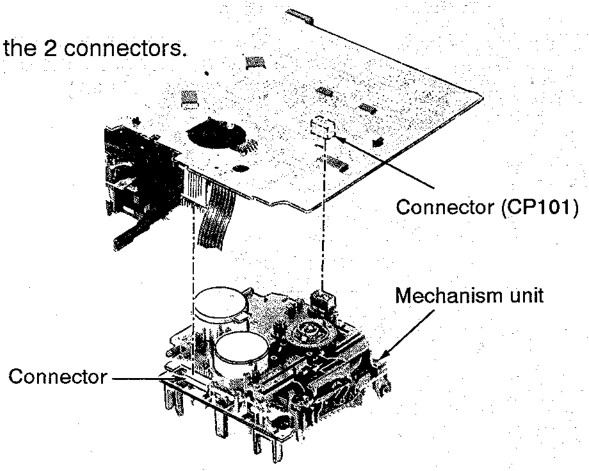
※ The below illustration shows DECK1 mechanism unit disassembly procedure. For DECK2 mechanism unit, follow the same procedure as DECK1.



**Step 3**
Unsolder the capstan motor terminals. (4 points)

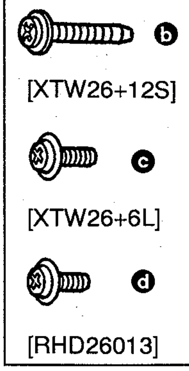
**Step 2**
Unsolder the reel motor terminals. (2 points)

[XTW2+6S]

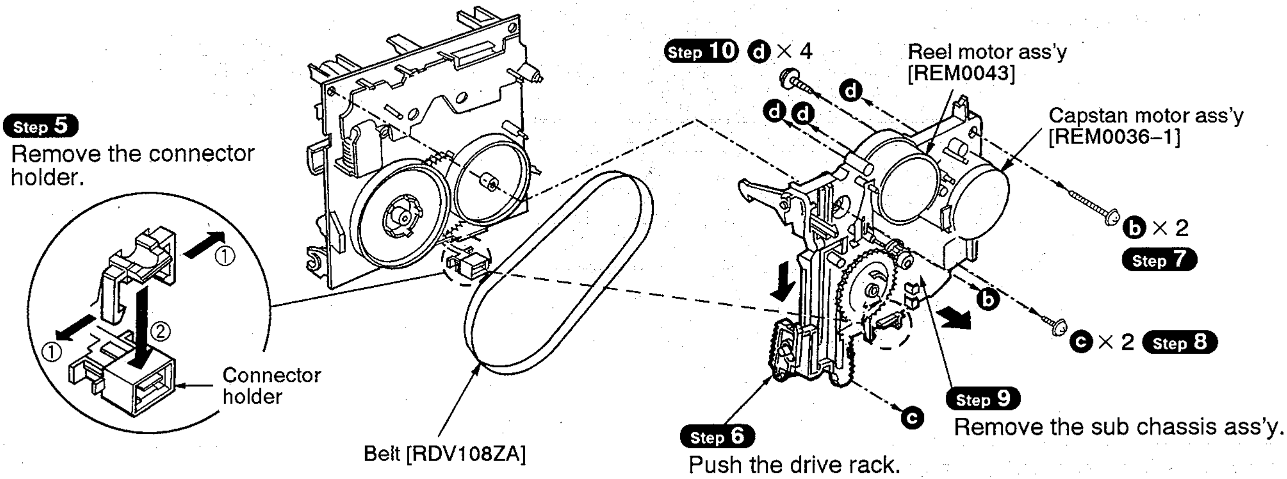


**Step 4**
Remove the 2 connectors.

Connector (CP101)
Mechanism unit
Connector



b
[XTW26+12S]
c
[XTW26+6L]
d
[RHD26013]



**Step 5**
Remove the connector holder.

**Step 6**
Push the drive rack.

**Step 7** b × 2

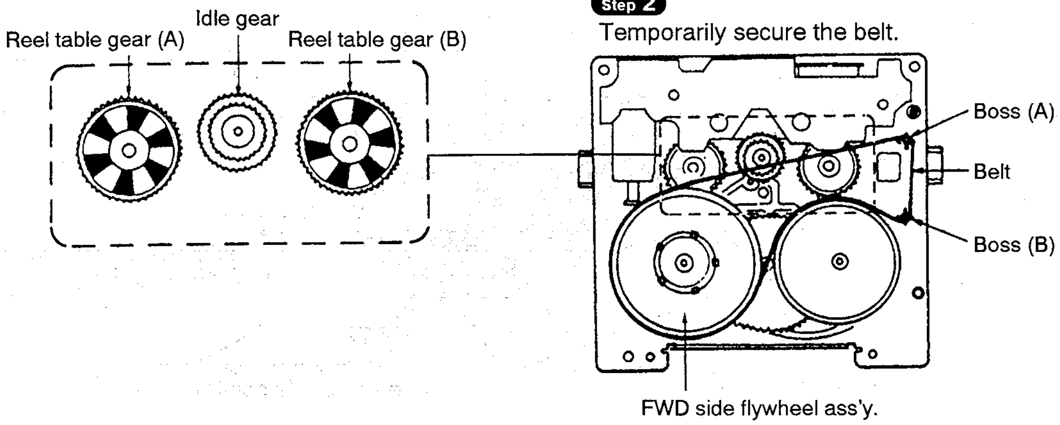
**Step 8** c × 2

**Step 9**
Remove the sub chassis ass'y.

**Step 10** d × 4

①
②
①
Connector holder
Belt [RDV108ZA]
d
d d
Reel motor ass'y
[REM0043]
Capstan motor ass'y
[REM0036–1]
b
c

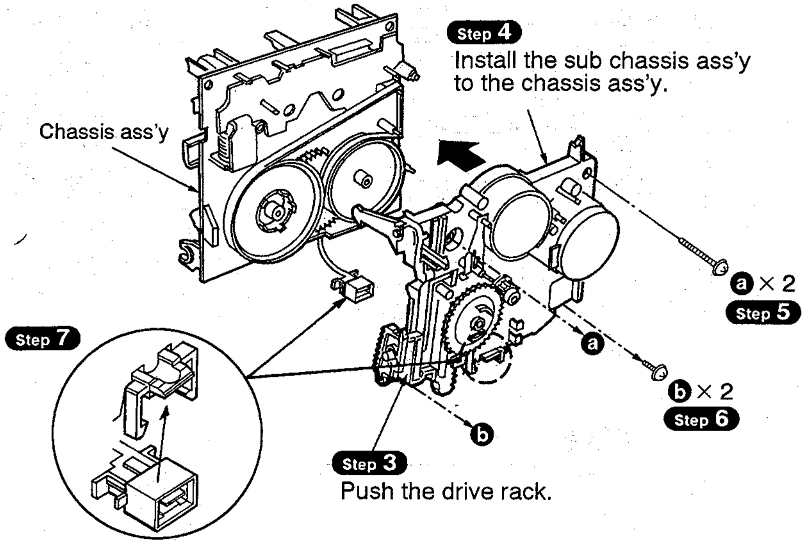
### Installation of the sub chassis ass'y after replacement



**Step 1**
Place the idle gear in the center.

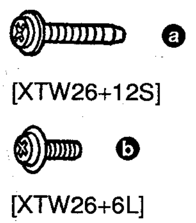
**Step 2**
Temporarily secure the belt.

Reel table gear (A)
Idle gear
Reel table gear (B)
Boss (A)
Belt
Boss (B)
FWD side flywheel ass'y.

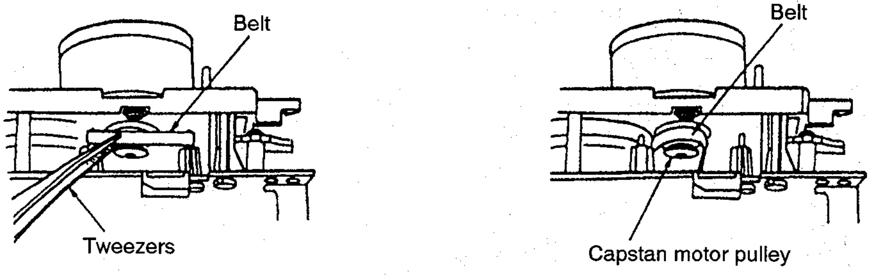

Chassis ass'y
ⓐ × 2
Step 5
ⓐ
ⓑ × 2
Step 6
ⓑ
Step 7

**Step 4** Install the sub chassis ass'y to the chassis ass'y.

**Step 3** Push the drive rack.

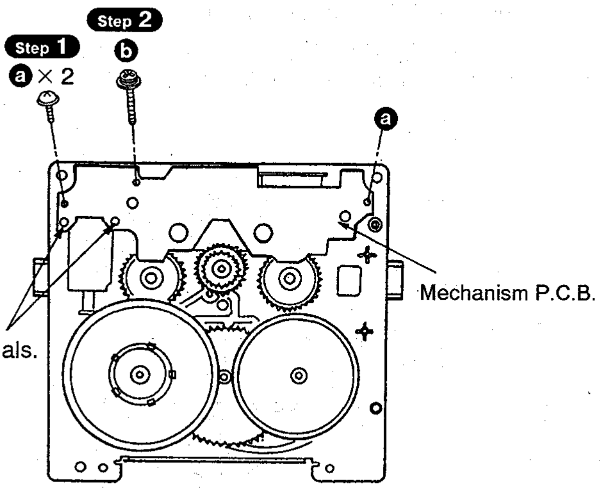

ⓐ
[XTW26+12S]
ⓑ
[XTW26+6L]

**Step 8**
Secure the belt with the capstan motor pulley.

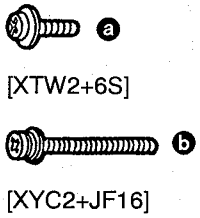

Belt
Tweezers
Belt
Capstan motor pulley

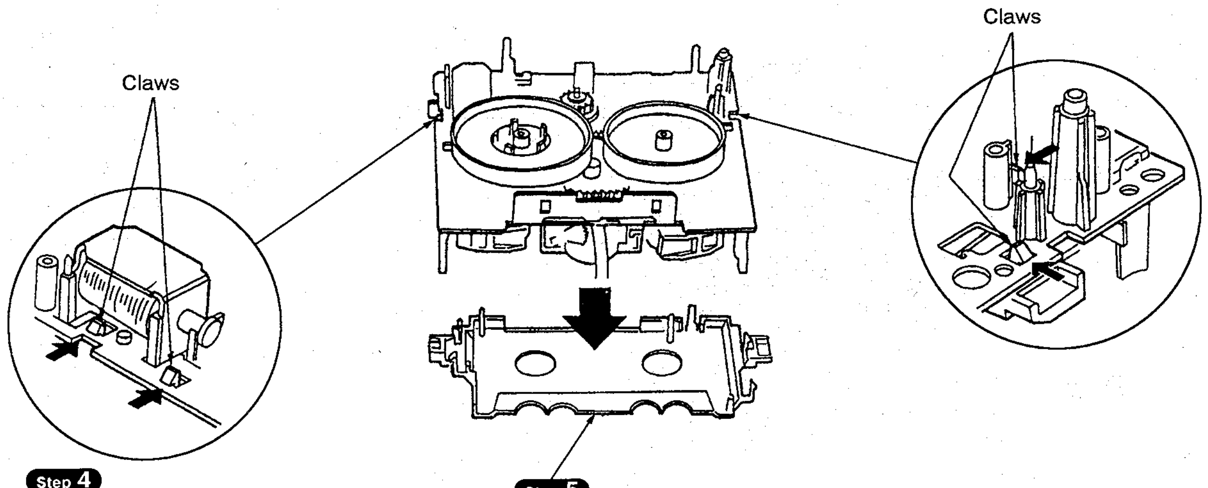
## 3. Replacement for the parts mounted on mechanism P.C.B. and solenoid

- Follow the item 1 ( **Step 1** ~ **Step 9** ) in checking procedure for each P.C.B. on pages 3 and 4.
- Follow the item 1 ( **Step 1** ~ **Step 4** ) in main component replacement procedures on pages 5 and 6.
- Follow the item 2 ( **Step 1** ~ **Step 8** ) in main component replacement procedures on pages 7 and 8.


Step 2
ⓑ
Step 1
ⓐ × 2
ⓐ
Mechanism P.C.B.

**Step 3** Unsolder the terminals.


ⓐ
[XTW2+6S]
ⓑ
[XYC2+JF16]


Claws
Claws

**Step 4**
Release the 4 claws.

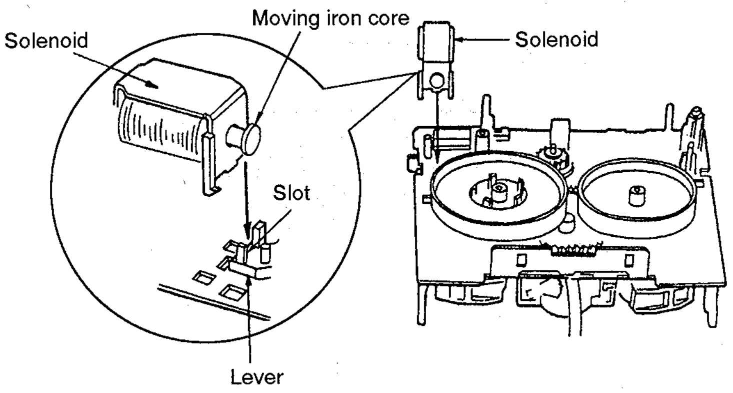
**Step 5**
Remove the ornament plate.

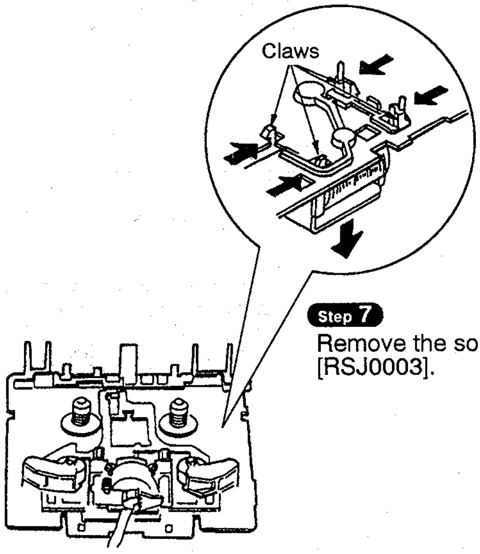
**Step 6**
Release the 4 claws.

**NOTE**

**Notice for installing the solenoid.**

- The moving iron core of solenoid should be aligned with slot of lever.


Solenoid
Moving iron core
Solenoid
Slot
Lever

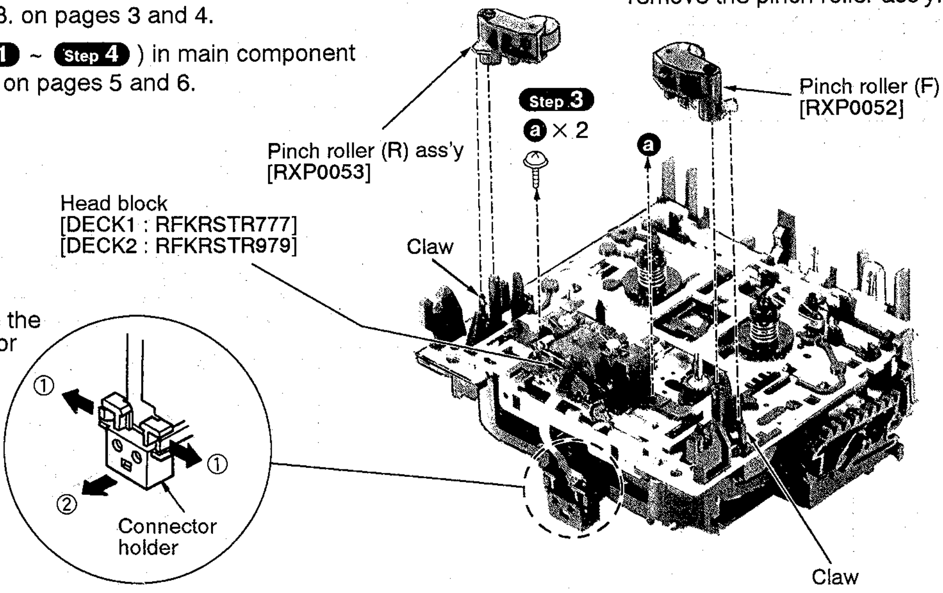


**Step 7**
Remove the solenoid [RSJ0003].

## 4. Replacement for the head block and pinch roller ass'y

- Follow the item 1 ( **Step 1** ~ **Step 9** ) in checking procedure for each P.C.B. on pages 3 and 4.
- Follow the item 1 ( **Step 1** ~ **Step 4** ) in main component replacement procedures on pages 5 and 6.

**Step 1**
Release the 2 claws, and then remove the pinch roller ass'y.


Pinch roller (F) ass'y
[RXP0052]
Step 3
ⓐ × 2
ⓐ
Pinch roller (R) ass'y
[RXP0053]
Head block
[DECK1 : RFKRSTR777]
[DECK2 : RFKRSTR979]
Claw
①
①
②
Connector holder
Claw

**Step 2**
Remove the connector holder.

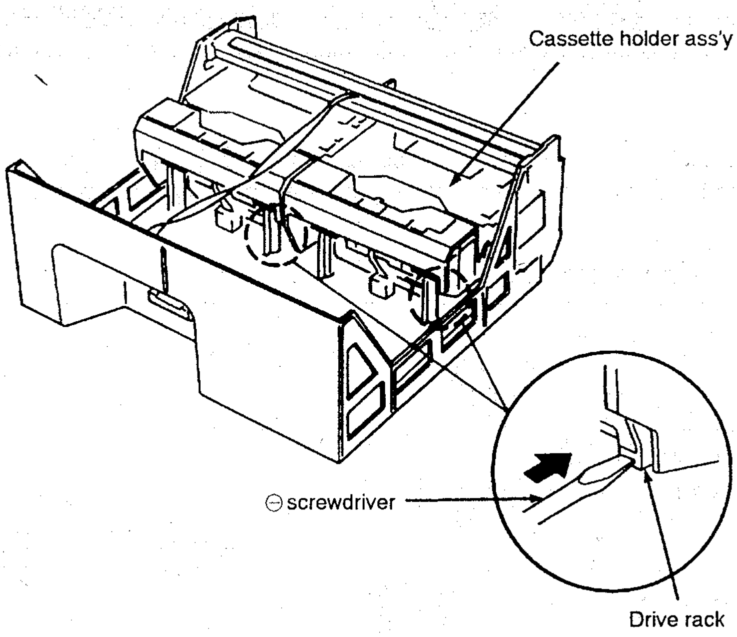
[XTW2+5L]

# • Manually opening and closing the cassette holder assembly

- Follow the item 1 (Step 1 ~ Step 4) in checking procedures for each P.C.B. on page 3.

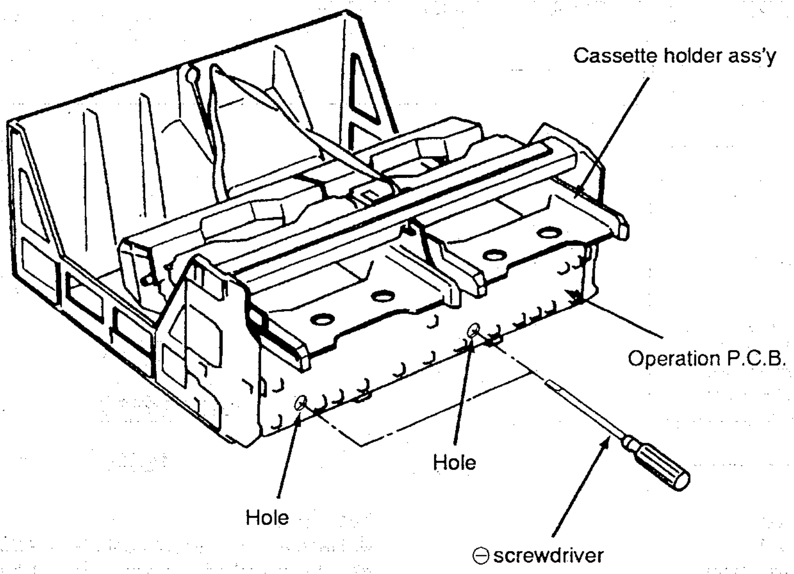
**OPENING**

Push the drive rack in the direction of the arrow with a ⊖screwdriver.


Cassette holder ass'y
⊖screwdriver
Drive rack

**CLOSING**

Push the drive rack back into position by inserting a ⊖screwdriver into the holes on the P.C.B.


Cassette holder ass'y
Operation P.C.B.
Hole
Hole
⊖screwdriver

# ■MEASUREMENTS AND ADJUSTMENTS

**This unit RS-CA10 is designed to operate on power supplied from the Amplifier (SE-CA10) through Tuner (ST-CA10). When connecting the unit to other system components, do not connect to the Amplifier (SE-CA10) directly. Be sure to connect this unit through the Tuner (ST-CA10).**

**When operating the unit RS-CA10 alone for testing and servicing, without having power supplied from the Amplifier (SE-CA10) and Tuner (ST-CA10), use the following method.**

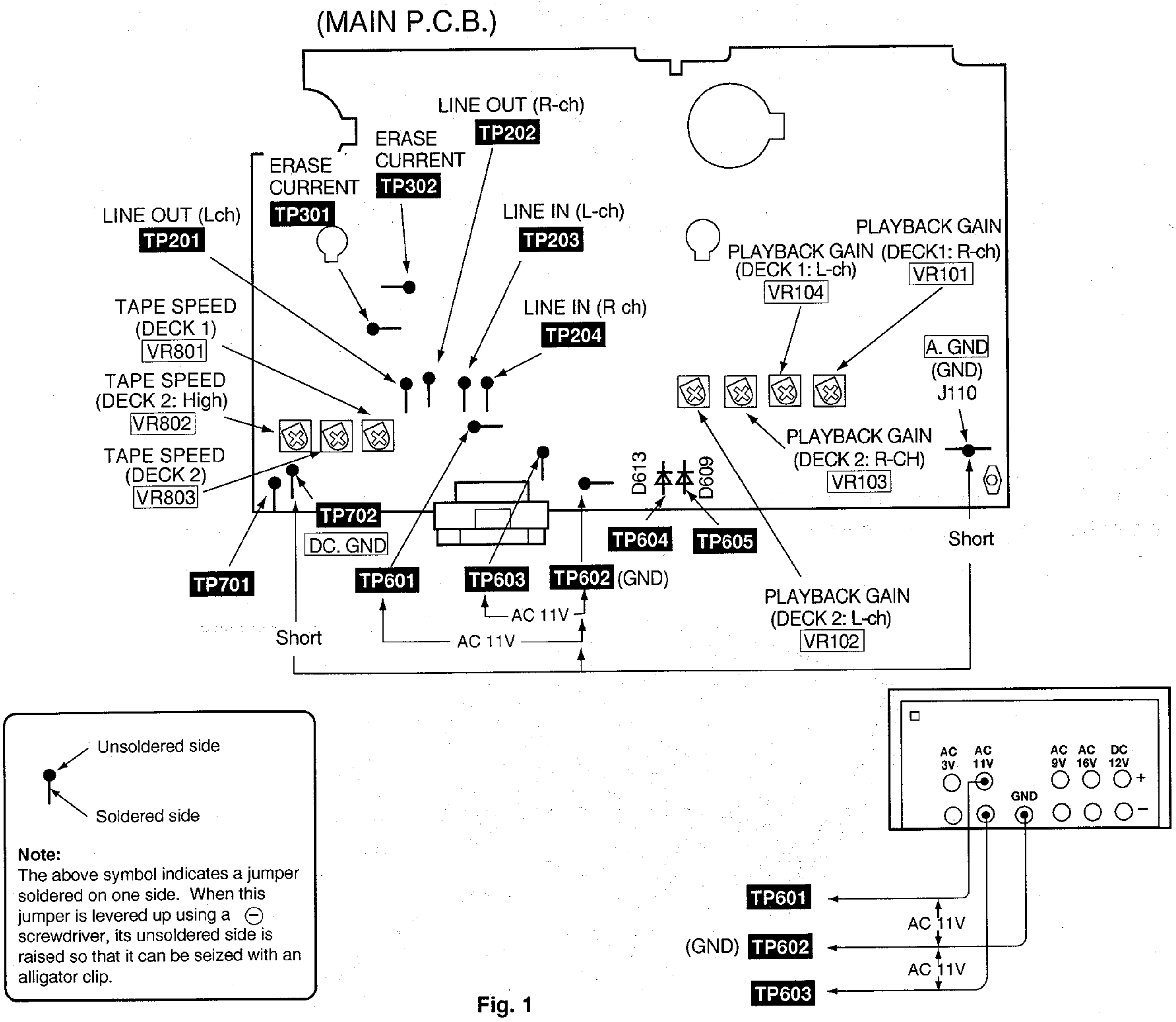
## ● To Supply Power Source

1. Short three sections the test points **TP602**, A. GND, and **TP702**.
2. Apply 11 AC power to test points between **TP601** and **TP602** (GND), and **TP603** and **TP602** (GND).

   **Note:** When operated alone, this unit automatically enter the TEST mode, causing either the DECK1 or DECK2 indicators to blink.

## ● To Check Signals

Connect an oscilloscope or a built-in amplifier speaker between line output for L-ch (**TP201**) and jumper (**J110**) A. GND, and line out for R-ch (**TP202**) and jumper (**J110**) A. GND and check if the signals are outputting from this unit.


(MAIN P.C.B.)
LINE OUT (R-ch)
TP202
ERASE CURRENT
TP302
ERASE CURRENT
TP301
LINE OUT (Lch)
TP201
LINE IN (L-ch)
TP203
LINE IN (R ch)
TP204
TAPE SPEED (DECK 1)
VR801
TAPE SPEED (DECK 2: High)
VR802
TAPE SPEED (DECK 2)
VR803
PLAYBACK GAIN (DECK1: R-ch)
VR101
PLAYBACK GAIN (DECK 1: L-ch)
VR104
A. GND (GND) J110
PLAYBACK GAIN (DECK 2: R-CH)
VR103
D613
D609
TP604
TP605
Short
TP702
DC. GND
TP701
TP601
TP603
TP602 (GND)
AC 11V
AC 11V
Short
PLAYBACK GAIN (DECK 2: L-ch)
VR102
AC 3V
AC 11V
GND
AC 9V
AC 16V
DC 12V
+
-
TP601
AC 11V
(GND) TP602
AC 11V
TP603
Unsoldered side
Soldered side

**Note:**
The above symbol indicates a jumper soldered on one side. When this jumper is levered up using a ⊖ screwdriver, its unsoldered side is raised so that it can be seized with an alligator clip.

**Fig. 1**

**Measurement Condition**
- Dolby NR switch; OFF
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature 20 ± 5°C (68± 9°F)

**Measuring instrument**
- EVM (Electronic Voltmeter)
- AF oscillator
- Digital frequency counter

**Test Tape**
- Head azimuth adjustment (8kHz, –20dB); QZZCFM
- Tape speed adjustment (3kHz, –10dB); QZZCWAT
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Recording/ playback frequency response adjustment;
  QZZCFM (315Hz/0dB, 315Hz/–20dB, 12.5kHz~63Hz/–20dB)
  Normal blank tape
  $CrO_2$ blank tape
  Metal blank tape

## HEAD AZIMUTH ADJUSTMENT (DECK1/2)

1. Connect the measuring instrument as shown in Fig. 2.
2. Replace azumuth screws for both forward and reverse direction after removing the screw-locking bond left on the head base.
   Fine adjustment of azimuth can not be performed with remaining the bond on the head base.
   (Supply part No. of azimath adjusting screw: **RHD17015**)
3. Playback the azimuth adjustment portion (8 kHz, –20dB) of test tape (QZZCFM). Adjust the azimuth adjusting screw until the outputs of the L/R-ch are maximized. (Refer to Fig. 3.)
   Make sure that the difference in the peak level between the left and right channels does not exceed 0.5dB.
4. Perform the same adjustment in reverse playback mode.

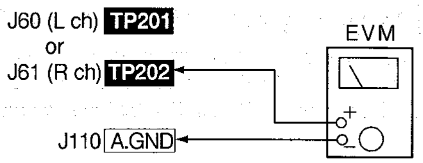


**Fig. 2**

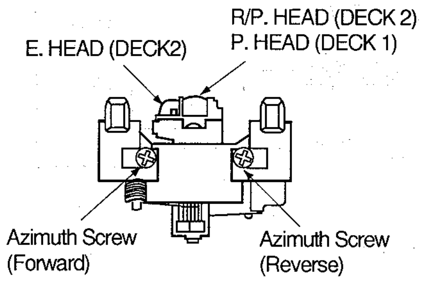


**Fig. 3**

### Check of the level difference forward and reverse directions

5. Playback the playback gain adjustment portion (315 Hz, 0dB) of test tape (QZZCFM). Check if level difference between forward and reverse direction is within 1.5 dB.
6. After the adjustment, apply screwlock to the azimuth adjusting screw.

## TAPE SPEED ADJUSTMENT (DECK1/2)

**Note:** When connecting the unit to other system components for testing, short the section between the test points **TP701** and **TP702** and turn on the entire system. (The unit is set to the TEST mode, and either the DECK1 or DECK2 indicators will blink.)

**Normal speed (Standard value: 3000 ± 45Hz)**

1. Connect the measuring instrument as shown in Fig. 4.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust Deck1=**VR801** and Deck 2= **VR803** for the output value shown below. (Refer to Fig. 1)

**Adjustment target: 3000 ± 15Hz (NORMAL speed)**
**Standard value: 3000 ± 45Hz (NORMAL speed)**

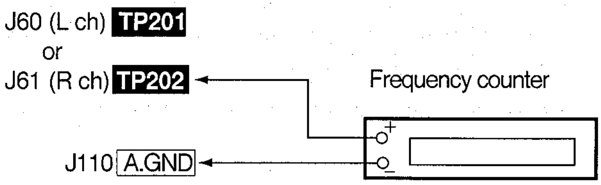


**Fig. 4**

**High speed [Set the unit to forward (FWD) mode.]**

4. Playback the middle portion on the test tape (QZZCWAT).
5. Press the one touch tape edit (High) button.
   This will set the high speed mode.
6. At that time, check if the output from DECK1 is within the standard value.

**Standard value: 5000 ± 600Hz (HIGH speed)**

7. Adjust **VR802** so that the output frequency of DECK 2 is within ± **30 Hz** for the value of the output frequency of DECK 1. (Refer to Fig. 1)

**Note:** When connecting the unit to other system components, disconnect the short between the test points **TP701** and **TP702**.

## PLAYBACK GAIN ADJUSTMENT (DECK 1/2)

1. Connect the measuring instrument as shown in Fig. 5.
2. Find the start of the 315Hz/0dB section of the test tape (QZZCFM), insert the tape into DECK 1 and 2, and play it back (FWD).
3. Adjust DECK 2: **VR102** (L-ch) [**VR103** (R-ch)] and DECK 1: **VR104** (L-ch) [**VR101** (R-ch)] so that the output is within the standard value. (Refer to Fig. 1).

**Standard value: 280mV ± 15mV**

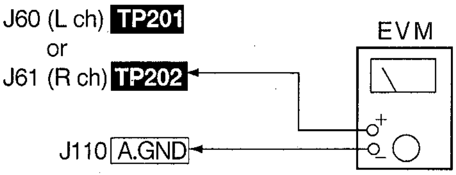


**Fig. 5**

## ERASE CURRENT CONFIRMATION (DECK2)

1. Connect the measuring instrument as shown in Fig. 6.
2. Insert the blank tape into DECK 2, and press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point TP301 and TP302 (the output on both edged of R313) is within the standard value.

| Standard value | | EVM reading |
|---|---|---|
| Normal tape | : 70 ± 25 mA | (70 ± 25 mA) |
| CrO2 tape | : 100 ± 25 mA | (100 ± 25 mA) |
| Metal tape | : 160± 25 mA | (160 ± 25 mA) |

**Note:** The test tape is not required when confirming the erase current.

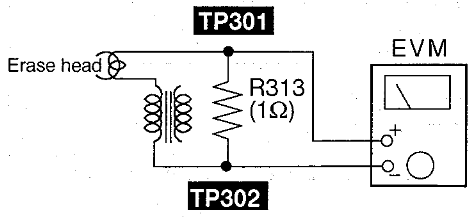


**Fig. 6**

## Playback frequency response check (DECK1/2)

1. Connect the measuring instrument as shown in Fig. 7
2. Playback the 315Hz/–20dB and 12.5 kHz to 63 Hz/–20dB sections of the test tape (QZZCFM) and then, using the 315 Hz/–20dB playback output as a reference (0 dB), confirm that the playback frequency response is within the range shown in Fig. 8.

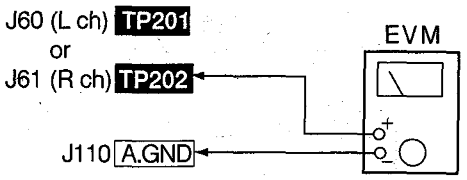


Fig. 7

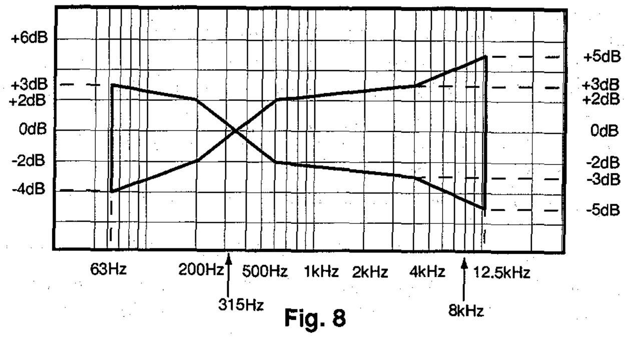


Fig. 8

## Recordnig/playback frequency response and gain check (DECK2)

**Normal tape check**

1. Connect the measuring instrument as shown in Fig. 9.
2. Insert a Normal-type blank tape into DECK 2.
3. Record signals at 50 Hz, 100Hz, 200 Hz, 500 Hz, 1kHz, 2kHz, 10kHz and 12.5 kHz (28mV).
4. Set the playback frequency of the recorded signals at 1kHz as the reference response (0 dB).
5. Playback the recorded signals to confirm that the output is within the range of the overall frequency response shown in Fig. 10.

**CrO2/ Metal tape check**

6. Repeat steps 3 to 5 for each tape and confirm that the output for each is within the range of the overall frequency response shown in Fig. 11.

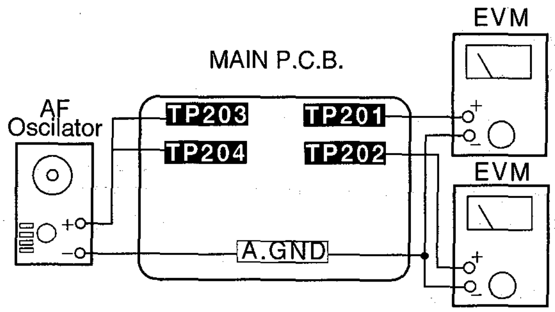


Fig. 9

Normal Overall frequency response chart (NR OUT)

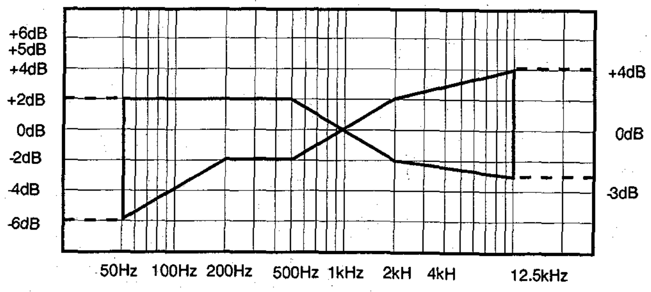


Fig. 10

CrO2/Metal Overall frequency response chart (NR OUT)

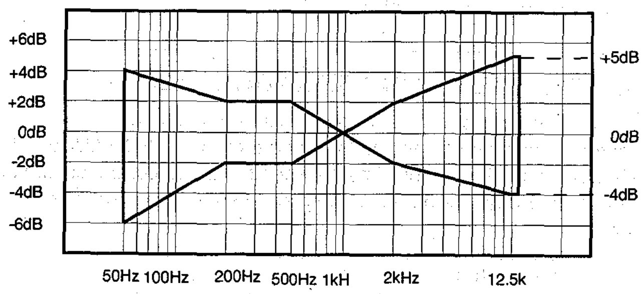


Fig. 11

# ■SERVICE MODE FUNCTION OF CASSETTE MECHANISM

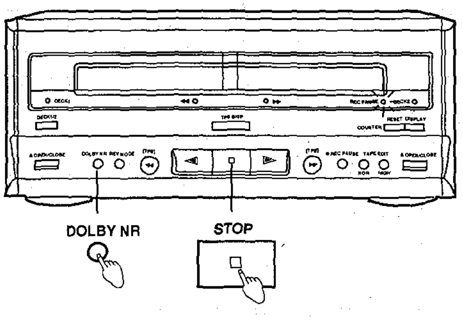
**This unit is equipped with a service mode function of cassette mechanism using the LED indicators [R. PLAY ( ◀ ), F. PLAY ( ▶ ), REW ( ◀◀ ), FF( ▶▶ )]. Use this function during maintenance to check faults of the items below.**

## • Cassette tapes to be prepared

| | |
|---|---|
| Metal tape: | Recorded music tape with only one erase-prevention tab intact (use middle portion of the tape). |
| Normal tape: }<br>CrO2 tape: } | Recorded music tape with both erase-prevention tabs intact (use middle portion of the tape). |

## • Selecting Service Mode

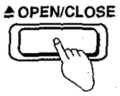
1. Turn on the power to the unit. (If RS-CA10 unit is removed from system, turn it on according to the procedure on page 12 of the original service manual.)
2. Check that no tape is inserted in the cassette deck.
   Press the DOLBY NR button for about 2 seconds, and keep pressing it, also press the STOP button for about 2 seconds. (Service mode cannot be selected with a tape inserted in the cassette deck.)
3. The LED indicator for REC PAUSE flashes, the service mode has been activated.



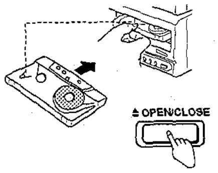
## • Deck 1 Mechanism Check

Use the Deck 1/2 select button to change the flashing Deck 2 indicator Deck 1.
(No change required if Deck 1 indicator already flashing.)

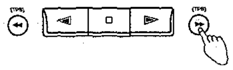
→ Open the Deck 1 cassette holder.
(OPEN/CLOSE button)



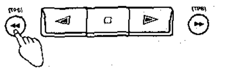
→ Insert a CrO2 tape into the Deck 1 and close the cassette holder.
(OPEN/CLOSE button)



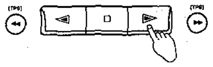
→ Press TPS ▶▶ button.
(Tape fast forwards for about 2 seconds then stops.)



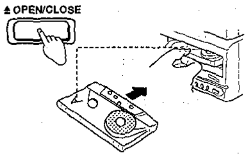
→ Press the ◀◀ TPS button. (Tape rewinds for about 2 seconds then stops.)



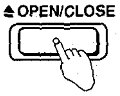
→ Press the PLAY button.
(After TPS operation and check, the tape stops.)



→ Open the Deck 1 cassette holder and replace the tape with a normal tape.
(OPEN/CLOSE button)

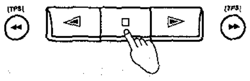


→ Close the Deck 1 cassette holder.
(OPEN/CLOSE button)



→ Press the REC/PAUSE button. (No record operation.)

→ Press the STOP button. Fault items 1 to 10 can be checked as the four LED indicators turn off or flash. (Refer to Table 1)
Each time the STOP button is pressed, the fault items are displayed in sequence.



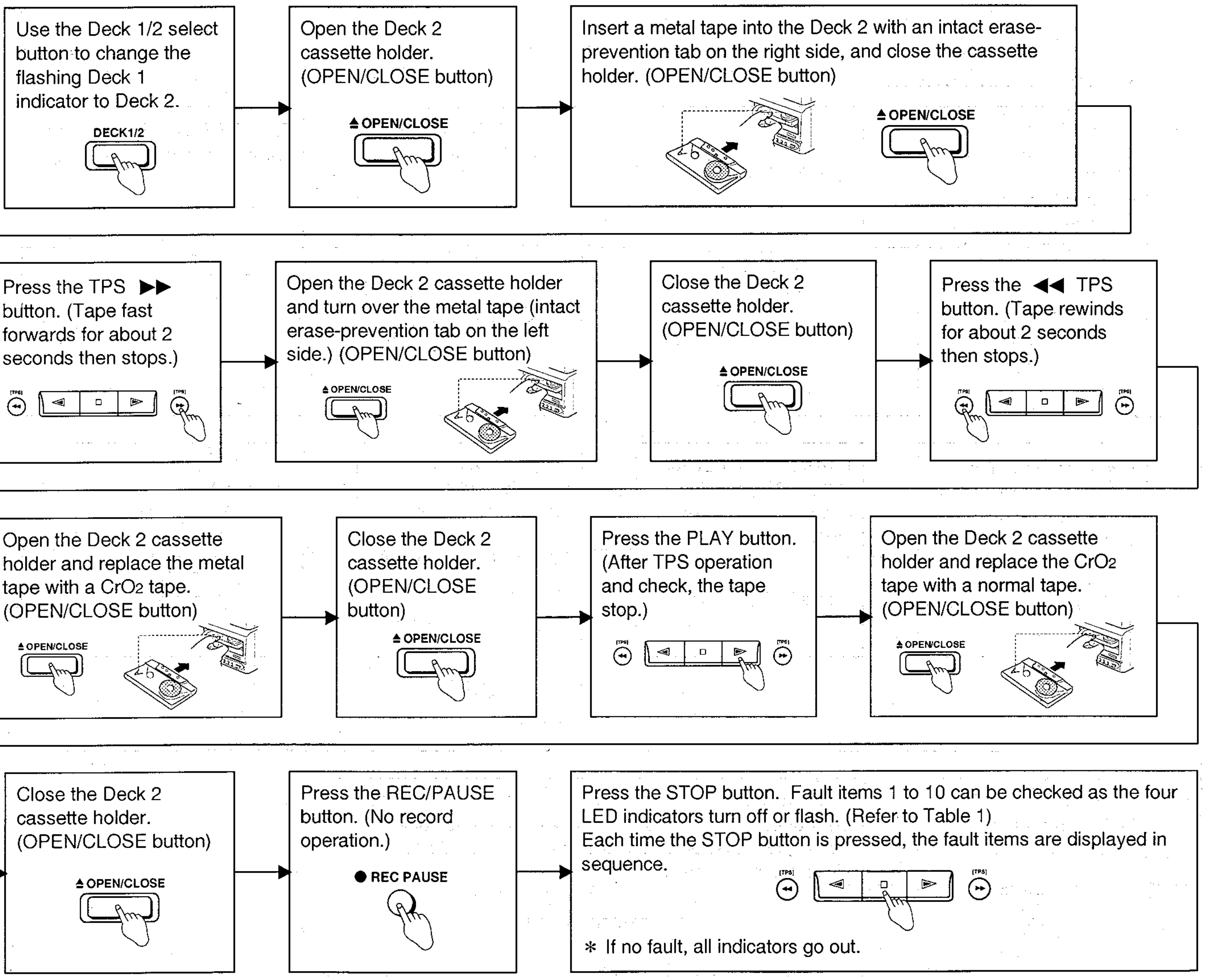
* If not fault, all indicators go out.

| No. | LED indicator status (off/flashing) | | | | Fault location |
|---|---|---|---|---|---|
| | ◀ | ▶ | ◀◀ | ▶▶ | |
| 1. | — | — | — | ● | MODE detect switch |
| 2. | — | — | ● | — | REC prevention switch |
| 3. | — | — | ● | ● | Half detect switch |
| 4. | — | ● | — | — | Deck OPEN switch |
| 5. | — | ● | — | ● | Deck CLOSE switch |
| 6. | — | ● | ● | — | CrO2 tape detect switch |
| 7. | — | ● | ● | ● | Metal tape detect switch |
| 8. | ● | — | — | — | Reel pulse detect system (Hall IC, etc.) |
| 9. | ● | — | — | ● | TPS operation |
| 10. | ● | — | ● | — | Reel motor |

**Table 1:** Service Mode Diagnostic Items

**Notes:**
"● ": Flashing
"—" : off
∗ If no fault, all indicators go out.

## • Deck 2 Mechanism Check



Use the Deck 1/2 select button to change the flashing Deck 1 indicator to Deck 2.

Open the Deck 2 cassette holder. (OPEN/CLOSE button)

Insert a metal tape into the Deck 2 with an intact erase-prevention tab on the right side, and close the cassette holder. (OPEN/CLOSE button)

Press the TPS ▶▶ button. (Tape fast forwards for about 2 seconds then stops.)

Open the Deck 2 cassette holder and turn over the metal tape (intact erase-prevention tab on the left side.) (OPEN/CLOSE button)

Close the Deck 2 cassette holder. (OPEN/CLOSE button)

Press the ◀◀ TPS button. (Tape rewinds for about 2 seconds then stops.)

Open the Deck 2 cassette holder and replace the metal tape with a CrO2 tape. (OPEN/CLOSE button)

Close the Deck 2 cassette holder. (OPEN/CLOSE button)

Press the PLAY button. (After TPS operation and check, the tape stop.)

Open the Deck 2 cassette holder and replace the CrO2 tape with a normal tape. (OPEN/CLOSE button)

Close the Deck 2 cassette holder. (OPEN/CLOSE button)

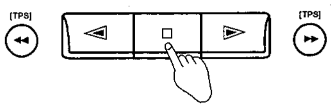
Press the REC/PAUSE button. (No record operation.)

Press the STOP button. Fault items 1 to 10 can be checked as the four LED indicators turn off or flash. (Refer to Table 1)
Each time the STOP button is pressed, the fault items are displayed in sequence.

∗ If no fault, all indicators go out.

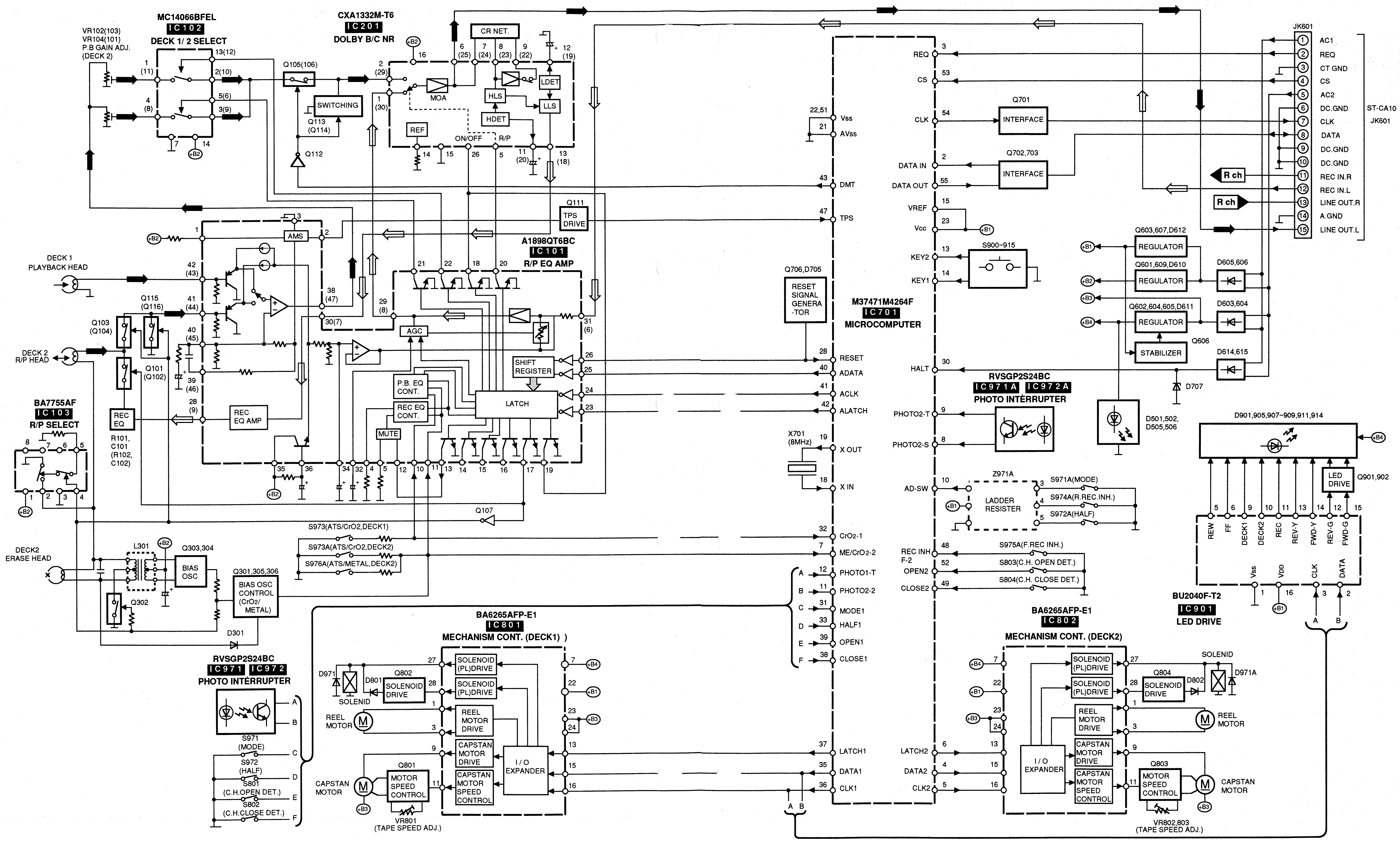
## • Exiting-Self-Check Mode

1. Press the STOP button for more than 5 seconds. (Diagnostic contents stored in memory for both Deck 1 and 2 are erased.)
2. Remove the cassette tape from the cassette holder.
3. Turn off the unit.



# ■BLOCK DIAGRAM

● Signal line ➡ : Playback signal ⇨ : Recording signal ※ ( ) : indicates pin No. of right channel .


MC14066BFEL
IC102
DECK 1/ 2 SELECT
VR102(103)
VR104(101)
P.B GAIN ADJ.
(DECK 2)
CXA1332M-T6
IC201
DOLBY B/C NR
Q105(106)
SWITCHING
Q113
(Q114)
Q112
MOA
CR NET.
HLS
HDET
LDET
LLS
REF
ON/OFF
R/P
Q111
TPS
DRIVE
AMS
A1898QT6BC
IC101
R/P EQ AMP
DECK 1
PLAYBACK HEAD
Q115
(Q116)
Q103
(Q104)
DECK 2
R/P HEAD
Q101
(Q102)
AGC
SHIFT
REGISTER
LATCH
P.B. EQ
CONT.
REC EQ
CONT.
MUTE
REC
EQ
REC
EQ AMP
R101,
C101
(R102,
C102)
BA7755AF
IC103
R/P SELECT
Q107
S973(ATS/CrO2,DECK1)
S973A(ATS/CrO2,DECK2)
S976A(ATS/METAL,DECK2)
DECK2
ERASE HEAD
L301
Q303,304
BIAS
OSC
Q301,305,306
BIAS OSC
CONTROL
(CrO2/
METAL)
Q302
D301
RVSGP2S24BC
IC971 IC972
PHOTO INTERRUPTER
S971
(MODE)
S972
(HALF)
S801
(C.H.OPEN DET.)
S802
(C.H.CLOSE DET.)
BA6265AFP-E1
IC801
MECHANISM CONT. (DECK1)
D971
D801
Q802
SOLENOID
DRIVE
SOLENOID
REEL
MOTOR
CAPSTAN
MOTOR
Q801
MOTOR
SPEED
CONTROL
VR801
(TAPE SPEED ADJ.)
SOLENOID
(PL)DRIVE
REEL
MOTOR
DRIVE
CAPSTAN
MOTOR
DRIVE
CAPSTAN
MOTOR
SPEED
CONTROL
I / O
EXPANDER
Q706,D705
RESET
SIGNAL
GENERA
-TOR
M37471M4264F
IC701
MICROCOMPUTER
X701
(8MHz)
Vss
AVss
DMT
TPS
RESET
ADATA
ACLK
ALATCH
X OUT
X IN
CrO2-1
ME/CrO2-2
PHOTO1-T
PHOTO2-2
MODE1
HALF1
OPEN1
CLOSE1
LATCH1
DATA1
CLK1
REQ
CS
CLK
DATA IN
DATA OUT
VREF
Vcc
KEY2
KEY1
HALT
PHOTO2-T
PHOTO2-S
AD-SW
REC INH
F-2
OPEN2
CLOSE2
LATCH2
DATA2
CLK2
Q701
INTERFACE
Q702,703
INTERFACE
S900~915
Z971A
LADDER
RESISTER
S971A(MODE)
S974A(R.REC.INH.)
S972A(HALF)
S975A(F.REC INH.)
S803(C.H. OPEN DET.)
S804(C.H. CLOSE DET.)
RVSGP2S24BC
IC971A IC972A
PHOTO INTERRUPTER
D501,502,
D505,506
JK601
AC1
REQ
CT GND
CS
AC2
DC.GND
CLK
DATA
DC.GND
DC.GND
REC IN.R
REC IN.L
LINE OUT.R
A.GND
LINE OUT.L
ST-CA10
JK601
R ch
R ch
Q603,607,D612
REGULATOR
Q601,609,D610
REGULATOR
Q602,604,605,D611
REGULATOR
Q606
STABILIZER
D605,606
D603,604
D614,615
D707
D901,905,907~909,911,914
LED
DRIVE
Q901,902
REW
FF
DECK1
DECK2
REC
REV-Y
FWD-Y
REV-G
FWD-G
Vss
VDD
CLK
DATA
BU2040F-T2
IC901
LED DRIVE
BA6265AFP-E1
IC802
MECHANISM CONT. (DECK2)
SOLENOID
D971A
Q804
SOLENOID
DRIVE
D802
REEL
MOTOR
Q803
MOTOR
SPEED
CONTROL
CAPSTAN
MOTOR
VR802,803
(TAPE SPEED ADJ.)
SOLENOID
(PL)DRIVE
REEL
MOTOR
DRIVE
CAPSTAN
MOTOR
DRIVE
CAPSTAN
MOTOR
SPEED
CONTROL
I / O
EXPANDER
B1
B2
B3
B4
A
B
C
D
E
F

# ■SCHEMATIC DIAGRAM (Parts list on pages 30, 31, 36, 37.)

- This schematic diagram may be modified at any time with development of new technology.

Page
**A** MAIN CIRCUIT ........ 21~25
**B** MECHANISM CIRCUIT (DECK 1) ........ 23
**C** MECHANISM CIRCUIT (DECK 2) ........ 23
**D** OPERATION CIRCUIT ........ 26
**E** LED CIRCUIT ........ 26

Notes:

- **S801**: DECK 1 Cassette holder open detection switch in “off” position.
- **S802**: DECK 1 Cassette holder close detection switch in “off” position.
- **S803**: DECK 2 Cassette holder open detection switch in “off” position.
- **S804**: DECK 2 Cassette holder close detection switch in “off” position.
- **S900**: Stop (□) switch.
- **S901**: Dolby noise-reduction switch (DOLBY NR).
- **S902**: Rewind tape program sensor switch ( ◀◀ [TPS]).
- **S903**: Reverse-side playback switch ( ◁ ).
- **S904**: TPS skip switch (TPS SKIP).
- **S905**: Forward-side playback switch ( ▷ ).
- **S906**: Fast forward tape program sensor switch ( ▶▶ [TPS]).
- **S907, 908**: Tape edit switches (TAPE EDIT).
  [S907: NOR, S908: HIGH]
- **S909**: Rec pause switch (● REC PAUSE ).
- **S910**: Deck 2 cassette holder open/ close switch ( ▲ OPEN/ CLOSE).
- **S911**: Counter display switch (DISPLAY ).
- **S912**: Counter reset switch (RESET).
- **S913**: Deck 1/ Deck 2 select switch (DECK 1/2).
- **S914**: DECK 1 Cassette holder open/ close switch ( ▲ OPEN/ CLOSE).
- **S915**: Reverse-mode select switch (REV. MODE).
- **S971**: DECK 1 Mode switch in “off” position.
- **S971A**: DECK 2 Mode switch in “off” position.
- **S972**: DECK 1 Half switch in “off” position.
- **S972A**: DECK 2 Half switch in “off” position.
- **S973**: DECK 1 ATS ($CrO_2$) switch in “off” position.
- **S973A**: DECK 2 ATS ($CrO_2$) switch in “off” position.
- **S974A**: DECK 2 Reverse rec. inhibit switch in “off” position.
- **S975A**: DECK 2 Forward rec. inhibit switch in “off” position.
- **S976A**: DECK 2 ATS (Metal) switch in “off” position.

- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
  1K=1,000 (Ω), 1M=1,000 (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ).....Voltage values at record mode.
  For measurement us EVM.
- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between **TP604** and **TP605**, and between **A. GND** and **TP602** are shorted.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  When replacing any of components, be sure to use only manufacture’s specified parts shown in the parts list.

- ➔ : Positive voltage line
  ➔ : Negative voltage line
  ➔ : Playback signal line
  ⇨ : Recording signal line

### • Caution!

C and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

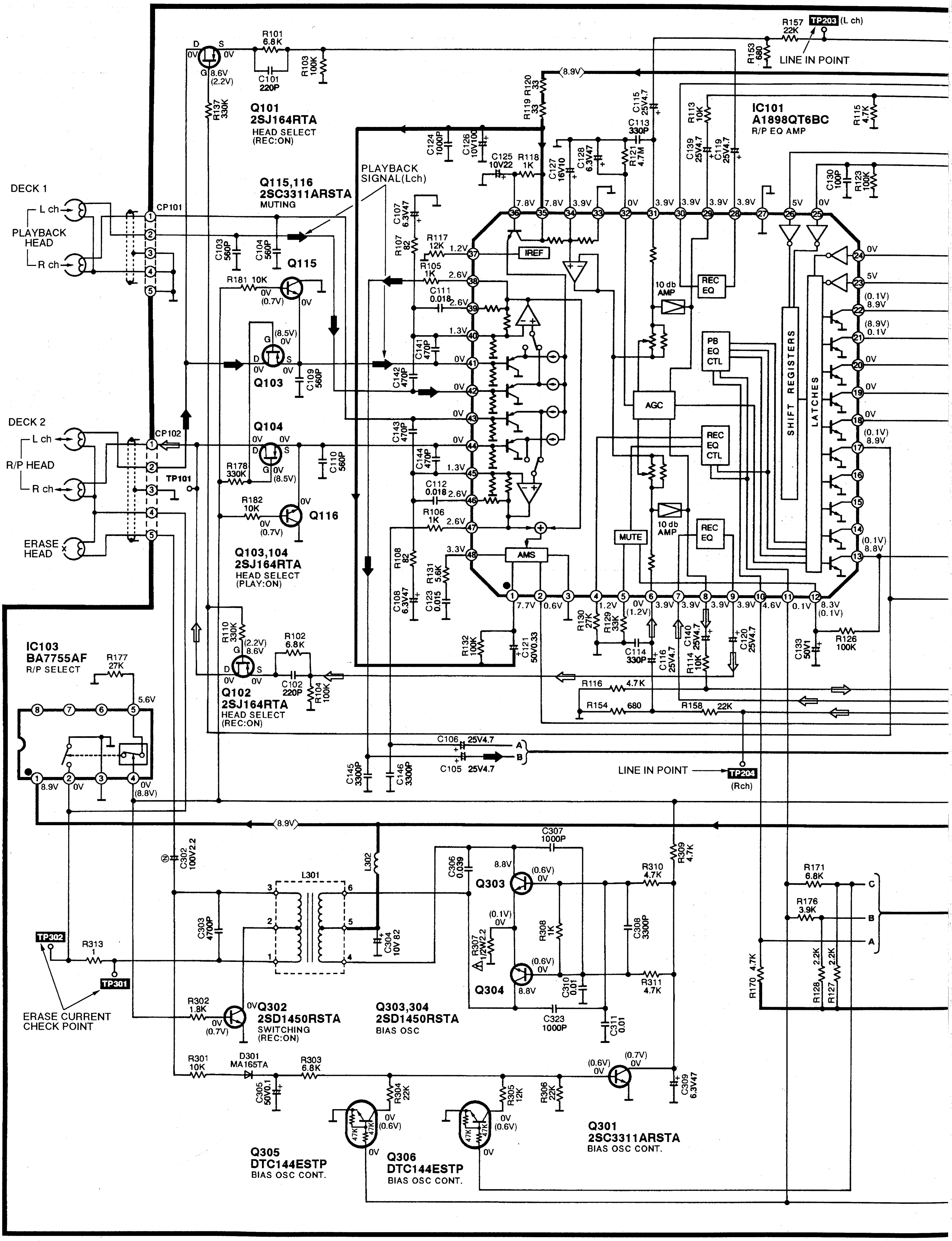
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.

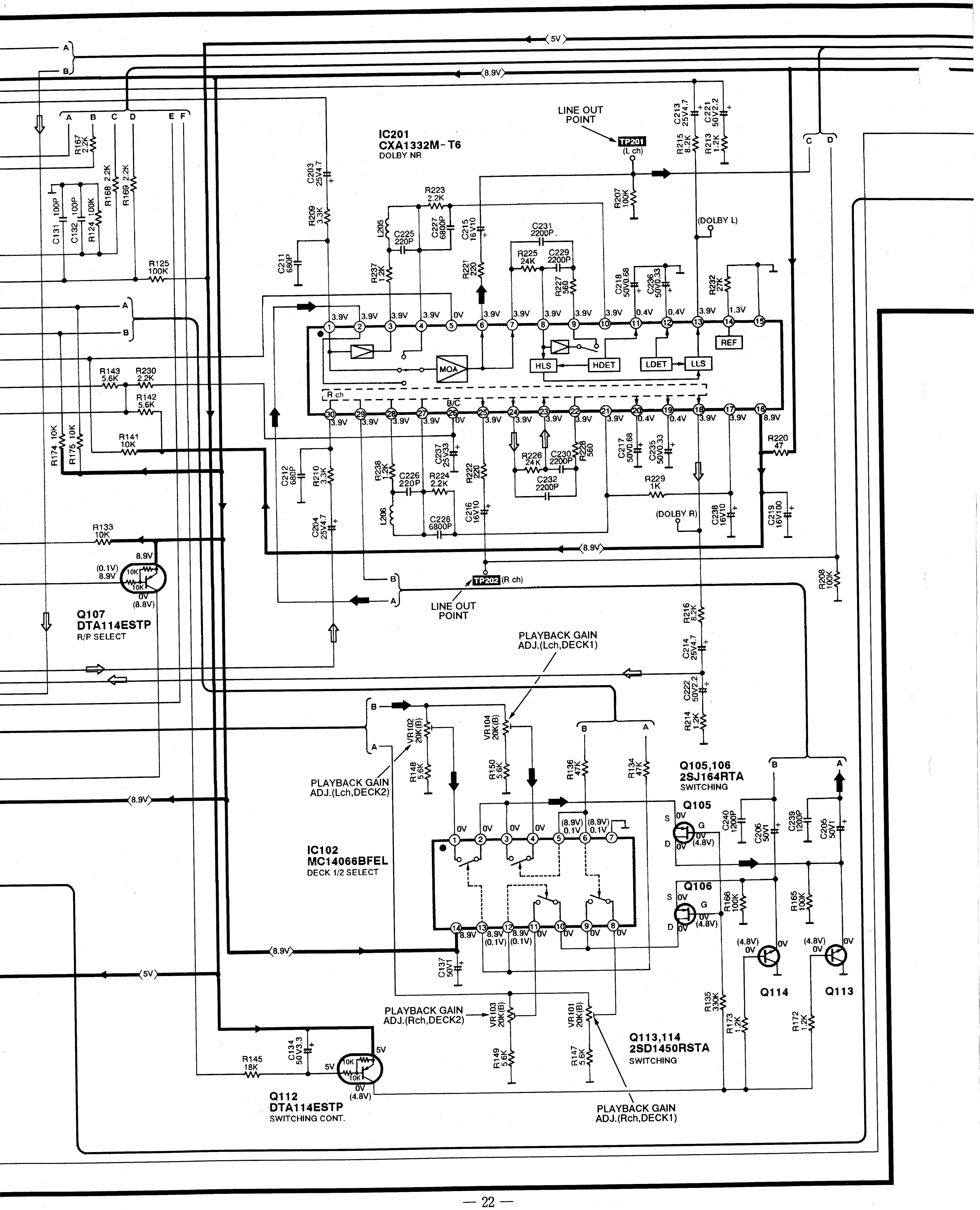
# ■TERMINAL GUIDE

## • IC701 (M37471M4264F): MICRO COMPUTER

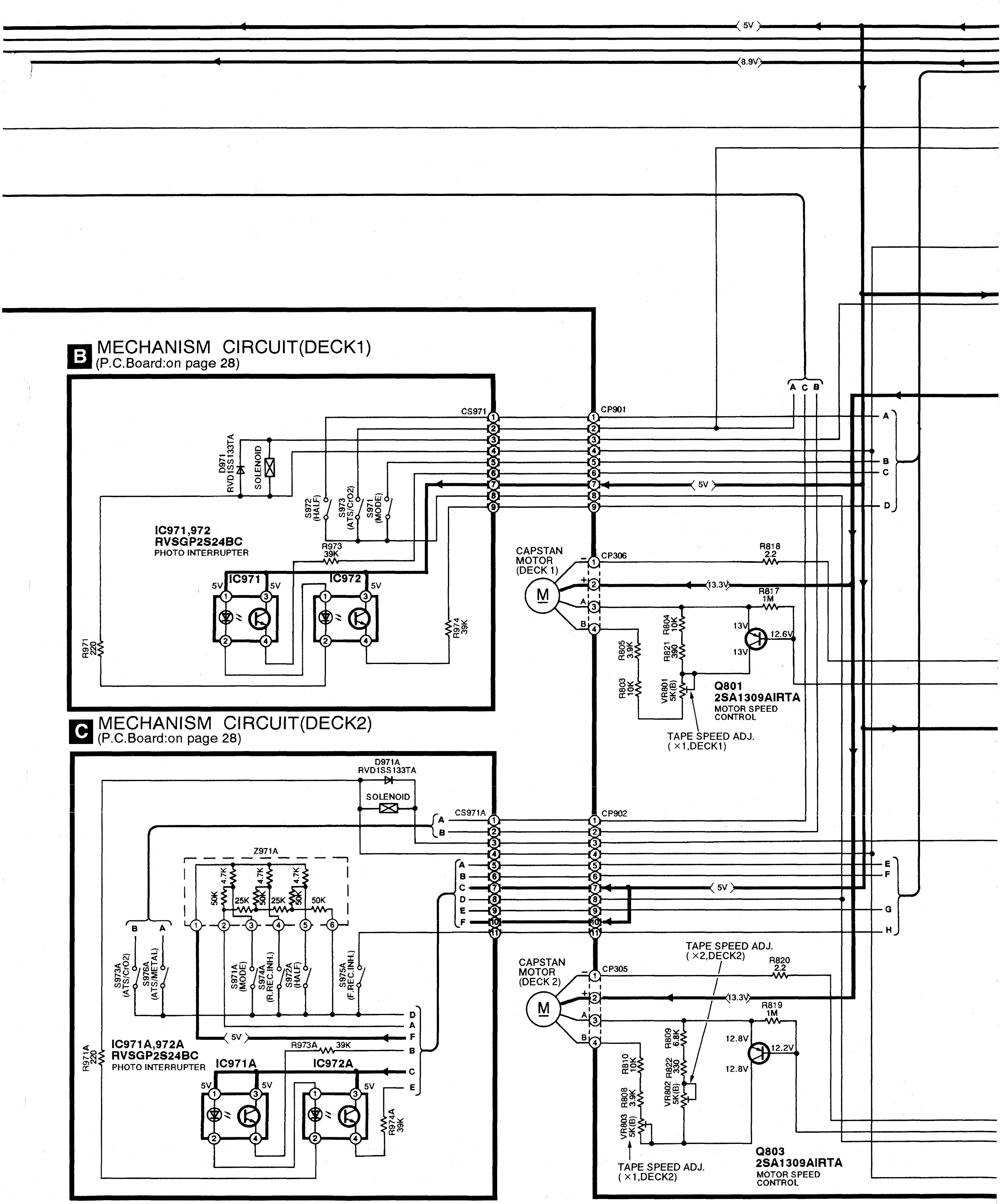
| Pin No. | Mark | I/O | Function |
|---|---|---|---|
| 1 | NC | – | Not used |
| 2 | DATA IN | I | Serial data input |
| 3 | REQ | I | Request signal input |
| 4 | DATA2 | O | Deck 2 mechanism control data output |
| 5 | CLK2 | O | Deck 2 mechanism control clock output |
| 6 | LATCH2 | O | Deck 2 mechanism control latch signal output |
| 7 | ME/$CrO_2$-2 | I | Deck 2 tape select switch input |
| 8 | PHOTO2_S | I | Deck 2 reverse side reel pulse input |
| 9 | PHOTO2_T | I | Deck 2 forward side reel pulse input |
| 10 | AD_SW | I | Deck 2 mechanism switch signal input |
| 11 | PHOTO1_S | I | Deck 1 reverse side reel pulse input |
| 12 | PHOTO2_T | I | Deck 1 forward side reel pulse input |
| 13 | KEY2 | I | Key switch signal input |
| 14 | KEY1 | I | |
| 15 | VREF | I | Reference voltage input |
| 16 | NC | – | Not used |
| 17 | NC | – | Not used |
| 18 | XIN | I | Clock input |
| 19 | XOUT | O | Clock output |
| 20 | NC | – | Not used |
| 21 | AVSS | – | Connect to GND |
| 22 | VSS | – | Connect to GND |
| 23 | VCC | – | Power supply (+5V) |
| 24 | NC | – | Not used |
| 25 | TEST | – | Test mode select (Not used, open) |
| 26 | CP_SEL1 | – | Not used |
| 27 | NC | – | Not used |
| 28 | RESET | I | Reset signal input |
| 29 | NC | – | Not used |
| 30 | HALT | I | AC power source detect signal input |
| 31 | MODE1 | I | Deck 1 mode detect switch signal input |
| 32 | ME/CrO2-1 | I | Deck 1 tape select switch signal input |
| 33 | HALF1 | I | Deck 1 Half detect switch signal input |
| 34 | NC | – | Not used |
| 35 | DATA1 | O | Deck 1 control data output |
| 36 | CLK1 | O | Deck 1 control clock output |
| 37 | LATCH1 | O | Deck 1 mechanism control latch signal output |
| 38 | CLOSE1 | I | Deck 1 cassette holder close detect switch signal input |
| 39 | OPEN1 | I | Deck 1 cassette holder open detect switch signal input |
| 40 | A DATA | O | Serial data output |
| 41 | A CLK | O | Serial clock output |
| 42 | A LATCH | O | Latch signal output |
| 43 | DMT | O | Muting control signal output |
| 44 | NC | – | Not used |
| 45 | NC | – | Not used |
| 46 | CP_SEL2 | – | Not used |
| 47 | TPS | I | TPS signal input |
| 48 | RECINH F_2 | I | Deck 2 record prevention tab detect switch signal input |
| 49 | CLOSE2 | I | Deck 2 cassette holder close detect switch signal input |
| 50 | NC | – | Not used |
| 51 | VSS | – | GND terminal |
| 52 | OPEN2 | I | Deck 2 cassette holder open detect switch signal input |
| 53 | CS | I | Serial data control signal input |
| 54 | CLK | O | Serial clock output |
| 55 | DATA OUT | O | Serial data output |
| 56 | NC | – | Not used |

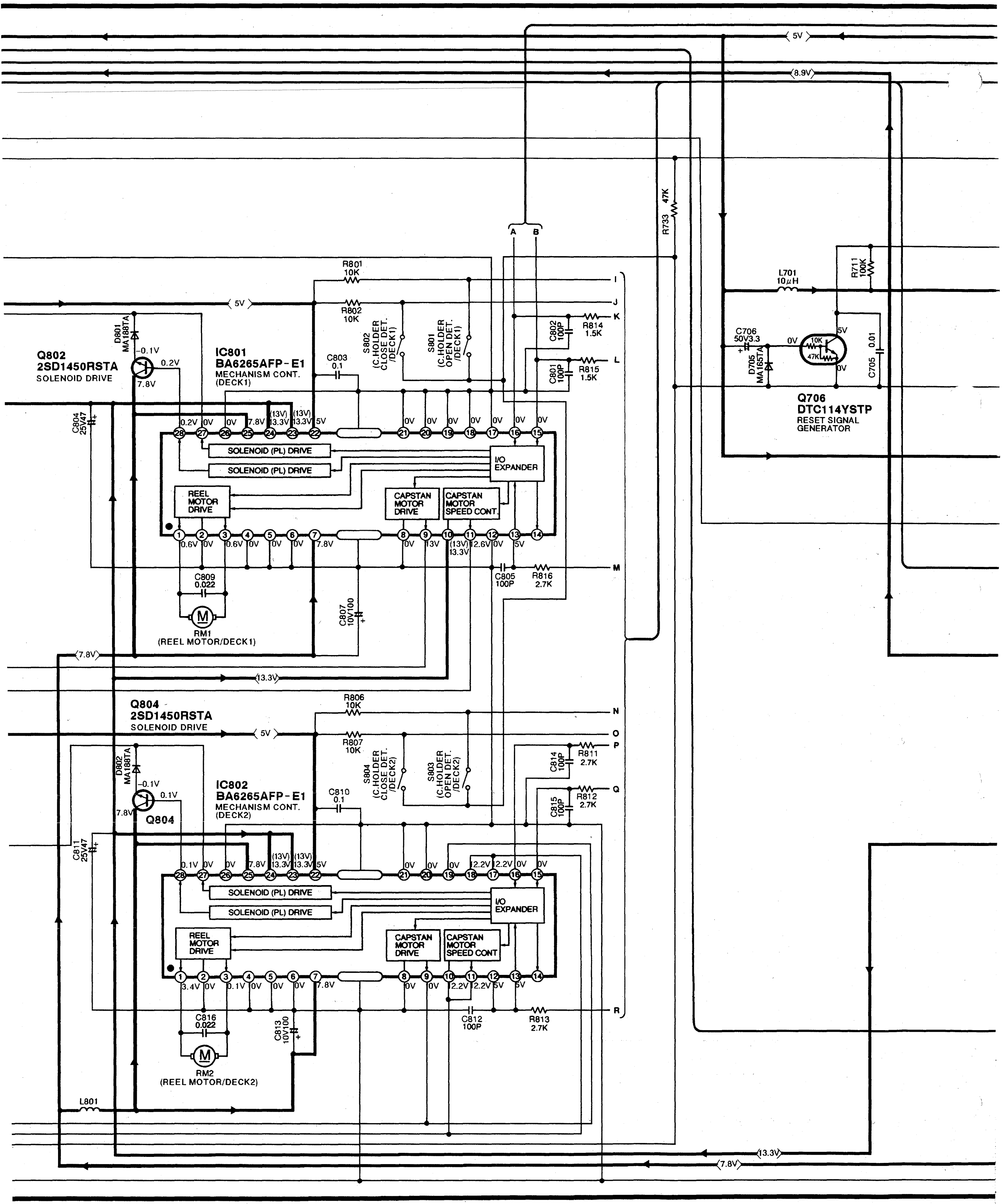
## A MAIN CIRCUIT (P.C.Board:on page 27)


DECK 1
L ch
PLAYBACK HEAD
R ch
CP101
DECK 2
L ch
R/P HEAD
R ch
ERASE HEAD
CP102
TP101
Q101
2SJ164RTA
HEAD SELECT
(REC:ON)
R101 6.8K
C101 220P
R103 100K
R137 330K
Q115,116
2SC3311ARSTA
MUTING
PLAYBACK SIGNAL(Lch)
C103 560P
C104 560P
Q115
R181 10K
Q103
C109 560P
Q104
C110 560P
R178 330K
R182 10K
Q116
Q103,104
2SJ164RTA
HEAD SELECT
(PLAY:ON)
Q102
2SJ164RTA
HEAD SELECT
(REC:ON)
R110 330K
R102 6.8K
C102 220P
R104 100K
IC103
BA7755AF
R/P SELECT
R177 27K
R119 33
R120 33
C124 1000P
C126 10V100
C125 10V22
R118 1K
C127 16V10
C128 6.3V47
R121 4.7M
C113 330P
C115 25V4.7
C107 6.3V47
R107 82
R117 12K
R105 1K
C111 0.018
C141 470P
C142 470P
C143 470P
C144 470P
C112 0.018
R106 1K
R108 82
C108 6.3V47
C123 0.015
R131 5.6K
R132 100K
C121 50V0.33
R130 27K
R129 33K
C114 330P
C116 25V4.7
C140 25V4.7
R114 10K
C120 25V4.7
R116 4.7K
R154 680
R158 22K
C106 25V4.7
C105 25V4.7
C145 3300P
C146 3300P
LINE IN POINT
TP204
(Rch)
R157 22K
TP203 (L ch)
R153 680
LINE IN POINT
R113 10K
C139 25V4.7
C119 25V4.7
IC101
A1898QT6BC
R/P EQ AMP
R115 4.7K
C130 100P
R123 100K
IREF
10 db AMP
REC EQ
PB EQ CTL
AGC
REC EQ CTL
MUTE
AMS
SHIFT REGISTERS
LATCHES
C133 50V1
R126 100K
(8.9V)
C302 100V2.2
L301
L302
C303 4700P
C304 10V 82
C306 0.039
C307 1000P
Q303
Q304
R307 1/2W2.2
R308 1K
C308 3300P
C310 0.01
C311 0.01
C323 1000P
R309 4.7K
R310 4.7K
R311 4.7K
Q303,304
2SD1450RSTA
BIAS OSC
TP302
R313 1
TP301
ERASE CURRENT CHECK POINT
R302 1.8K
Q302
2SD1450RSTA
SWITCHING
(REC:ON)
R301 10K
D301 MA165TA
R303 6.8K
C305 50V0.1
R304 22K
R305 12K
R306 22K
C309 6.3V47
Q301
2SC3311ARSTA
BIAS OSC CONT.
Q305
DTC144ESTP
BIAS OSC CONT.
Q306
DTC144ESTP
BIAS OSC CONT.
47K
R171 6.8K
R176 3.9K
R170 4.7K
R128 2.2K
R127 2.2K
A
B
C

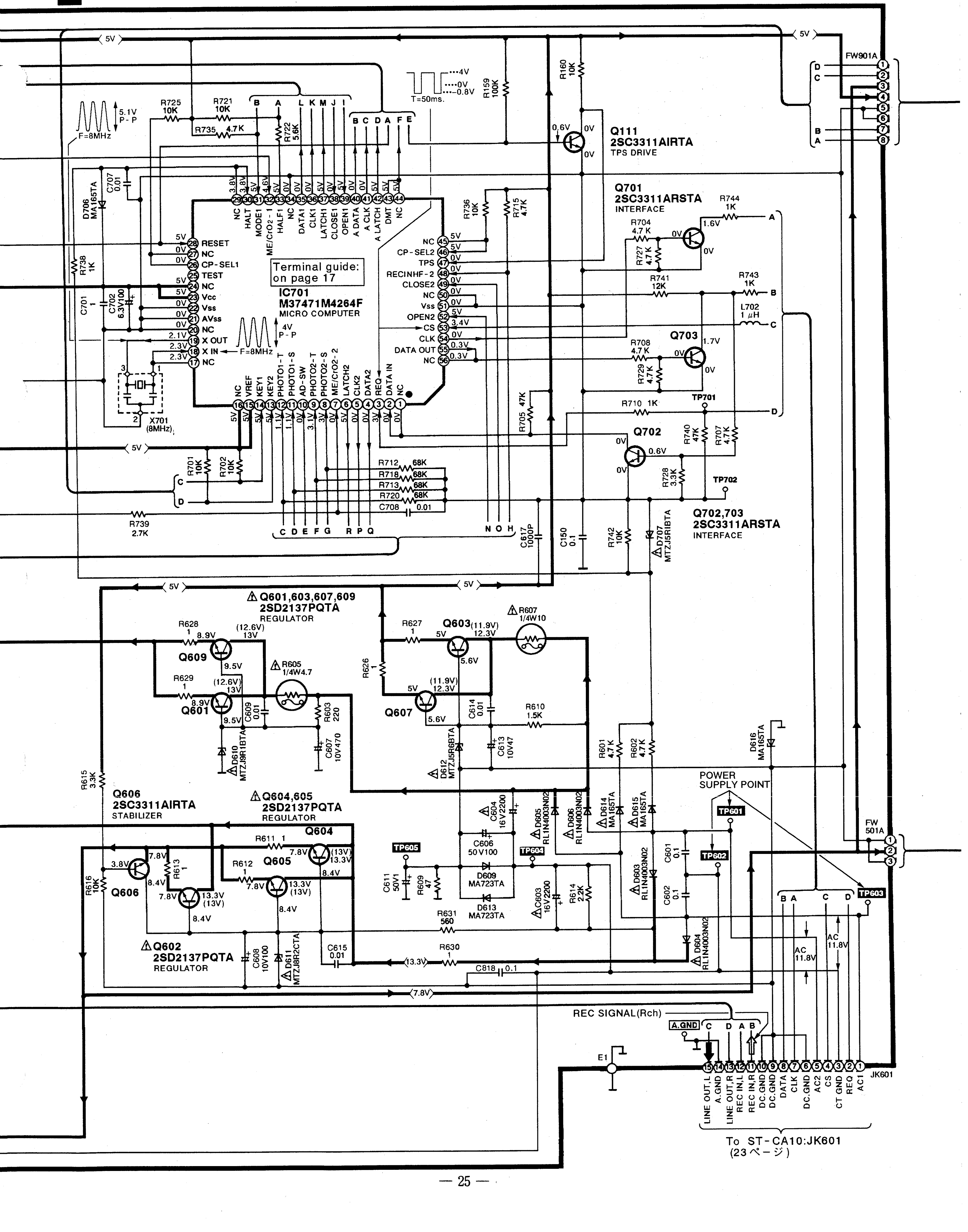

5V
8.9V
A
B
A B C D E F
R167 2.2K
C131 100P
C132 100P
R124 100K
R168 2.2K
R169 2.2K
R125 100K
C203 25V4.7
R209 3.3K
C211 680P
IC201
CXA1332M-T6
DOLBY NR
LINE OUT POINT
TP201
(L ch)
R207 100K
C213 25V4.7
C221 50V2.2
R215 8.2K
R213 1.2K
C D
(DOLBY L)
R223 2.2K
L205
C225 220P
C227 6800P
C215 16V10
R237 1.2K
R221 220
C231 2200P
R225 24K
C229 2200P
R227 560
C218 50V0.68
C236 50V0.33
R232 27K
3.9V 3.9V 3.9V 3.9V 0V 3.9V 3.9V 3.9V 3.9V 3.9V 0.4V 0.4V 3.9V 1.3V
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
REF
MOA
HLS
HDET
LDET
LLS
R ch
B/C
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16
3.9V 3.9V 3.9V 3.9V 0V 3.9V 3.9V 3.9V 3.9V 3.9V 0.4V 0.4V 3.9V 3.9V 8.9V
R143 5.6K
R230 2.2K
R142 5.6K
R141 10K
R174 10K
R175 10K
C212 680P
R210 3.3K
R238 1.2K
C226 220P
R224 2.2K
C237 25V33
R222 220
R226 24K
C230 2200P
R228 560
C232 2200P
C217 50V0.68
C235 50V0.33
R229 1K
R220 47
L206
C228 6800P
C216 16V10
C204 25V4.7
(DOLBY R)
C238 16V10
C219 16V100
8.9V
R133 10K
8.9V
(0.1V) 8.9V
10K
10K
0V (8.8V)
Q107
DTA114ESTP
R/P SELECT
B
A
TP202 (R ch)
LINE OUT POINT
R208 100K
R216 8.2K
C214 25V4.7
C222 50V2.2
R214 1.2K
PLAYBACK GAIN ADJ.(Lch,DECK1)
B
A
VR102 20K(B)
VR104 20K(B)
R148 5.6K
R150 5.6K
PLAYBACK GAIN ADJ.(Lch,DECK2)
B A
R136 47K
R134 47K
Q105,106
2SJ164RTA
SWITCHING
8.9V
0V 0V 0V 0V (8.9V) 0.1V (8.9V) 0.1V
1 2 3 4 5 6 7
Q105
S G D
0V 0V (4.8V) 0V
IC102
MC14066BFEL
DECK 1/2 SELECT
14 13 12 11 10 9 8
8.9V 8.9V (0.1V) 8.9V (0.1V) 0V 0V 0V 0V
Q106
S G D
0V 0V (4.8V) 0V
C240 1200P
C206 50V1
C239 1200P
C205 50V1
B A
R166 100K
R165 100K
(4.8V) 0V 0V
(4.8V) 0V 0V
Q114
Q113
8.9V
5V
C137 50V1
PLAYBACK GAIN ADJ.(Rch,DECK2)
VR103 20K(B)
VR101 20K(B)
R149 5.6K
R147 5.6K
R135 330K
R173 1.2K
R172 1.2K
Q113,114
2SD1450RSTA
SWITCHING
R145 18K
C134 50V3.3
5V
5V
10K
10K
0V (4.8V)
Q112
DTA114ESTP
SWITCHING CONT.
PLAYBACK GAIN ADJ.(Rch,DECK1)

## A MAIN CIRCUIT (P.C.Board:on page 27)

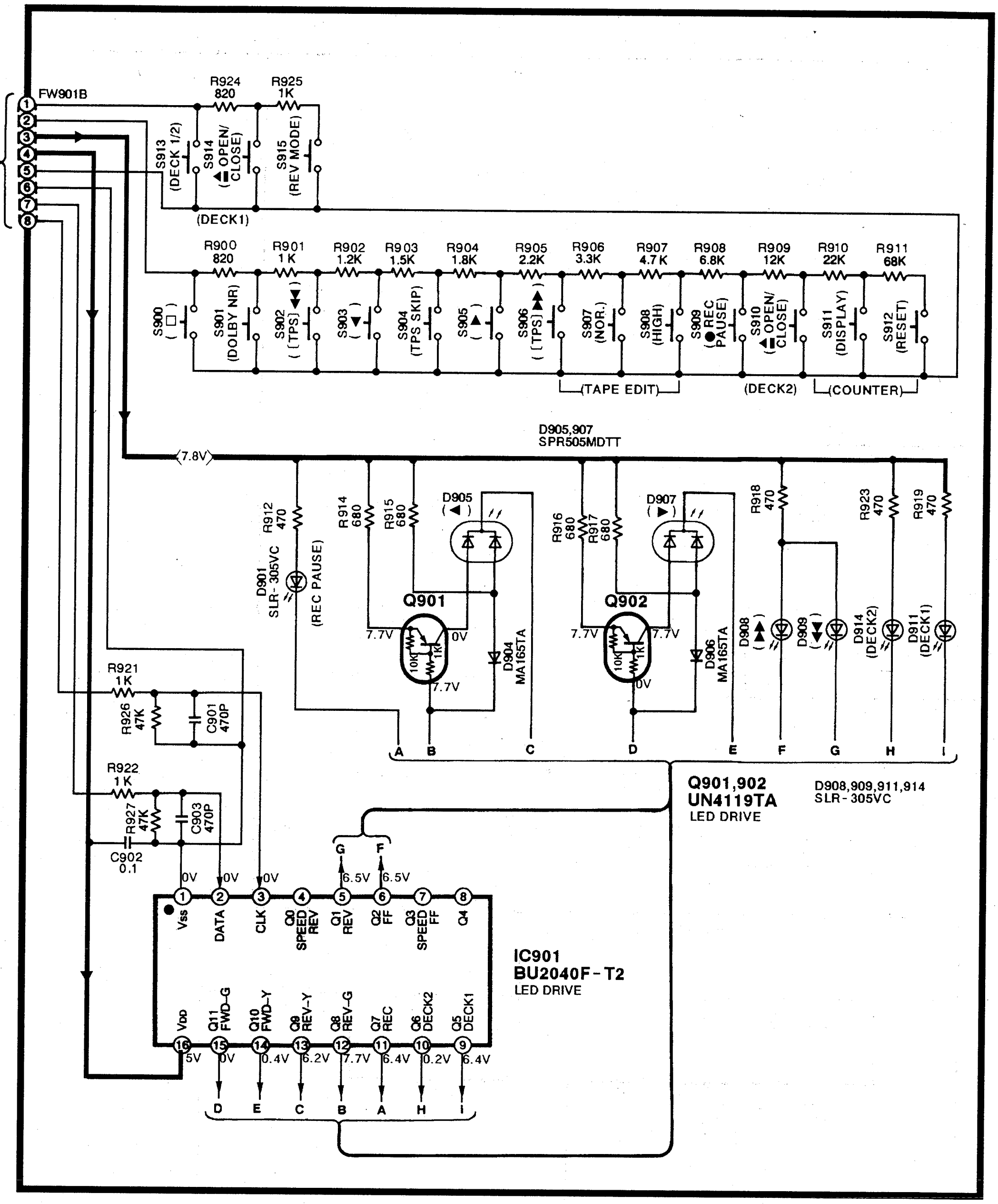

5V
8.9V
B MECHANISM CIRCUIT(DECK1)
(P.C.Board:on page 28)
CS971
CP901
A C B
A
B
C
D
5V
D971
RVD1SS133TA
SOLENOID
S972 (HALF)
S973 (ATS/CrO2)
S971 (MODE)
IC971,972
RVSGP2S24BC
PHOTO INTERRUPTER
R973 39K
IC971
IC972
5V
R974 39K
R971 220
CAPSTAN MOTOR (DECK 1)
M
CP306
R818 2.2
13.3V
R817 1M
R804 10K
R805 3.9K
R821 390
13V
12.6V
R803 10K
VR801 5K(B)
Q801
2SA1309AIRTA
MOTOR SPEED CONTROL
TAPE SPEED ADJ. (×1,DECK1)
C MECHANISM CIRCUIT(DECK2)
(P.C.Board:on page 28)
D971A
RVD1SS133TA
SOLENOID
CS971A
CP902
Z971A
4.7K
50K
25K
E
F
G
H
S973A (ATS/CrO2)
S976A (ATS/METAL)
S971A (MODE)
S974A (R.REC.INH.)
S972A (HALF)
S975A (F.REC.INH.)
IC971A,972A
RVSGP2S24BC
PHOTO INTERRUPTER
R971A 220
R973A 39K
IC971A
IC972A
R974A 39K
CAPSTAN MOTOR (DECK 2)
CP305
TAPE SPEED ADJ. (×2,DECK2)
R820 2.2
R819 1M
R809 6.8K
12.8V
12.2V
R810 10K
R822 330
VR802 5K(B)
R808 3.9K
VR803 5K(B)
TAPE SPEED ADJ. (×1,DECK2)
Q803
2SA1309AIRTA
MOTOR SPEED CONTROL


5V
8.9V
R733 47K
A B
R801 10K
R802 10K
I
J
K
L
M
N
O
P
Q
R
5V
D801 MA188TA
Q802
2SD1450RSTA
SOLENOID DRIVE
-0.1V
0.2V
7.8V
IC801
BA6265AFP-E1
MECHANISM CONT.
(DECK1)
C803 0.1
S802 (C.HOLDER CLOSE DET. /DECK1)
S801 (C.HOLDER OPEN DET. /DECK1)
C802 100P
R814 1.5K
C801 100P
R815 1.5K
C804 25V47
SOLENOID (PL) DRIVE
SOLENOID (PL) DRIVE
I/O EXPANDER
REEL MOTOR DRIVE
CAPSTAN MOTOR DRIVE
CAPSTAN MOTOR SPEED CONT.
0.2V 0V 0V 7.8V (13V) 13.3V (13V) 13.3V 5V 0V 0V 0V 0V 0V 0V 0V
0.6V 0V 0.6V 0V 0V 0V 7.8V 0V 13V (13V) 13.3V 2.6V 0V 5V
C809 0.022
RM1 (REEL MOTOR/DECK1)
C807 10V100
C805 100P
R816 2.7K
7.8V
13.3V
L701 10μH
R711 100K
C706 50V3.3
D705 MA165TA
0V
10K
47K
5V
0V
0.01
C705
Q706
DTC114YSTP
RESET SIGNAL GENERATOR
Q804
2SD1450RSTA
SOLENOID DRIVE
5V
R806 10K
R807 10K
D802 MA188TA
-0.1V
0.1V
7.8V
Q804
IC802
BA6265AFP-E1
MECHANISM CONT.
(DECK2)
C810 0.1
S804 (C.HOLDER CLOSE DET. /DECK2)
S803 (C.HOLDER OPEN DET. /DECK2)
C814 100P
R811 2.7K
C815 100P
R812 2.7K
C811 25V47
0.1V 0V 0V 7.8V (13V) 13.3V (13V) 13.3V 5V 0V 0V 0V 2.2V 2.2V 0V 0V
3.4V 0V 0.1V 0V 0V 0V 7.8V 0V 0V 2.2V 2.2V 5V 5V
C816 0.022
RM2 (REEL MOTOR/DECK2)
C813 10V100
C812 100P
R813 2.7K
L801
13.3V
7.8V
M

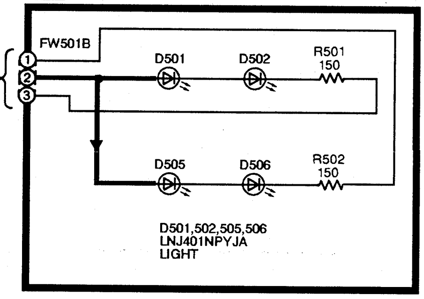
## **A** MAIN CIRCUIT (P.C.Board:on page 27)


5V
FW901A
R725 10K
R721 10K
R735 4.7K
R722 5.6K
5.1V P-P
F=8MHz
T=50ms.
4V
0V
-0.8V
R159 100K
R160 10K
0.6V
0V
Q111
2SC3311AIRTA
TPS DRIVE
D706 MA165TA
C707 0.01
R738 1K
C701 1
C702 6.3V100
RESET
NC
CP-SEL1
TEST
Vcc
Vss
AVss
X OUT
X IN
F=8MHz
X701 (8MHz)
Terminal guide: on page 17
IC701
M37471M4264F
MICRO COMPUTER
HALT
MODE1
ME/CrO2-1
HALF1
DATA1
CLK1
LATCH1
CLOSE1
OPEN1
A DATA
A CLK
A LATCH
DMT
CP-SEL2
TPS
RECINHF-2
CLOSE2
OPEN2
CS
CLK
DATA OUT
VREF
KEY1
KEY2
PHOTO1-T
PHOTO1-S
AD-SW
PHOTO2-T
PHOTO2-S
ME/CrO2-2
LATCH2
CLK2
DATA2
REQ
DATA IN
R736 10K
R715 4.7K
Q701
2SC3311ARSTA
INTERFACE
R744 1K
R704 4.7K
R727 4.7K
R741 12K
R743 1K
L702 1 μH
Q703
R708 4.7K
R729 4.7K
R705 47K
R710 1K
TP701
Q702
R740 47K
R707 4.7K
R728 3.3K
TP702
R701 10K
R702 10K
R739 2.7K
R712 68K
R718 68K
R713 68K
R720 68K
C708 0.01
C617 1000P
C150 0.1
R742 10K
D707 MTZJ5R1BTA
Q702,703
2SC3311ARSTA
INTERFACE
Q601,603,607,609
2SD2137PQTA
REGULATOR
R628 1
Q609
R629 1
Q601
R605 1/4W4.7
C609 0.01
R603 220
C607 10V470
D610 MTZJ9R1BTA
R627 1
Q603
R607 1/4W10
R626 1
Q607
C614 0.01
R610 1.5K
C613 10V47
D612 MTZJ5R6BTA
R601 4.7K
R602 4.7K
D616 MA165TA
POWER SUPPLY POINT
TP601
TP602
TP603
TP604
TP605
R615 3.3K
Q606
2SC3311AIRTA
STABILIZER
Q604,605
2SD2137PQTA
REGULATOR
R611 1
Q604
R612 1
Q605
R613 1
R616 10K
Q602
2SD2137PQTA
REGULATOR
C608 10V100
D611 MTZJ8R2CTA
C615 0.01
R630 1
C818 0.1
C604 16V2200
C606 50V100
D609 MA723TA
D613 MA723TA
D605 RL1N4003N02
D606 RL1N4003N02
D614 MA165TA
D615 MA165TA
D603 RL1N4003N02
D604 RL1N4003N02
C601 0.1
C602 0.1
C603 16V2200
R614 2.2K
C611 50V1
R609 47
R631 560
FW 501A
AC 11.8V
REC SIGNAL(Rch)
A.GND
E1
JK601
LINE OUT,L
A.GND
LINE OUT,R
REC IN,L
REC IN,R
DC.GND
DC.GND
DATA
CLK
DC.GND
AC2
CS
CT GND
REQ
AC1
To ST-CA10:JK601
(23ページ)

## D OPERATION CIRCUIT (P.C.Board:on page 28)


FW901B
R924 820
R925 1K
S913 (DECK 1/2)
S914 (⏏ OPEN/CLOSE)
S915 (REV MODE)
(DECK1)
R900 820
R901 1K
R902 1.2K
R903 1.5K
R904 1.8K
R905 2.2K
R906 3.3K
R907 4.7K
R908 6.8K
R909 12K
R910 22K
R911 68K
S900 (□)
S901 (DOLBY NR)
S902 (TPS)
S903
S904 (TPS SKIP)
S905
S906 (TPS)
S907 (NOR.)
S908 (HIGH)
S909 (●REC PAUSE)
S910 (⏏ OPEN/CLOSE)
S911 (DISPLAY)
S912 (RESET)
(TAPE EDIT)
(DECK2)
(COUNTER)
D905,907 SPR505MDTT
7.8V
R912 470
D901 SLR-305VC
(REC PAUSE)
R914 680
R915 680
D905 (◀)
Q901
7.7V
0V
7.7V
D904 MA165TA
R916 680
R917 680
D907 (▶)
Q902
7.7V
7.7V
0V
D906 MA165TA
R918 470
D908
D909
R923 470
D914 (DECK2)
R919 470
D911 (DECK1)
10K
1K
A B C D E F G H I
R921 1K
R926 47K
C901 470P
R922 1K
R927 47K
C903 470P
C902 0.1
Q901,902 UN4119TA LED DRIVE
D908,909,911,914 SLR-305VC
G F
6.5V 6.5V
0V 0V 0V
Vss DATA CLK Q0 SPEED REV Q1 REV Q2 FF Q3 SPEED FF Q4
IC901 BU2040F-T2 LED DRIVE
VDD Q11 FWD-G Q10 FWD-Y Q9 REV-Y Q8 REV-G Q7 REC Q6 DECK2 Q5 DECK1
5V 0V 0.4V 6.2V 7.7V 6.4V 0.2V 6.4V
D E C B A H I

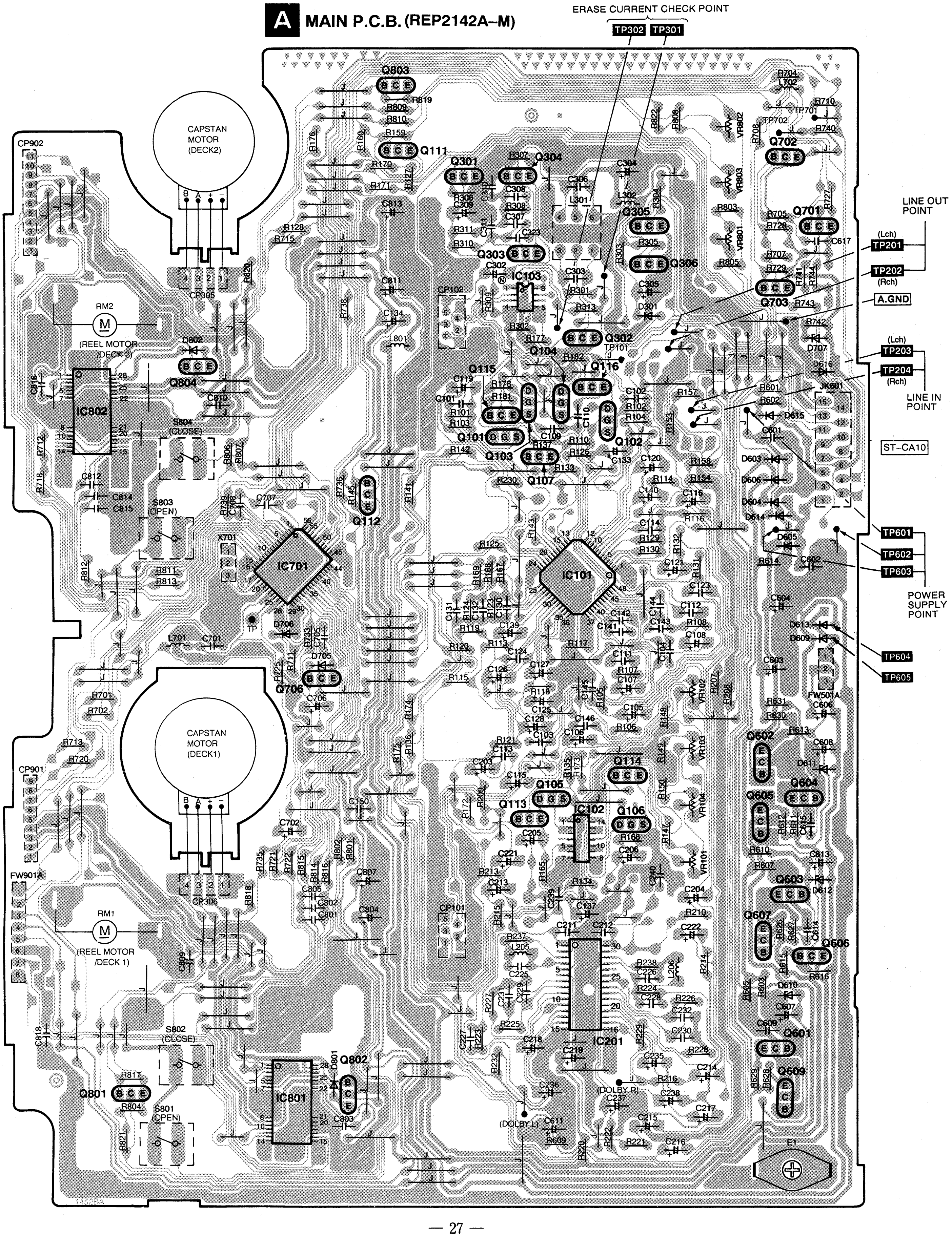
## E LED CIRCUIT (P.C.Board:on page 28)


FW501B
D501
D502
R501 150
D505
D506
R502 150
D501,502,505,506 LNJ401NPYJA LIGHT

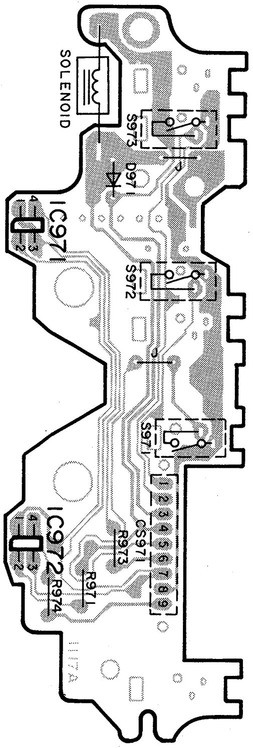
# ■PRINTED CIRCUIT BOARD DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

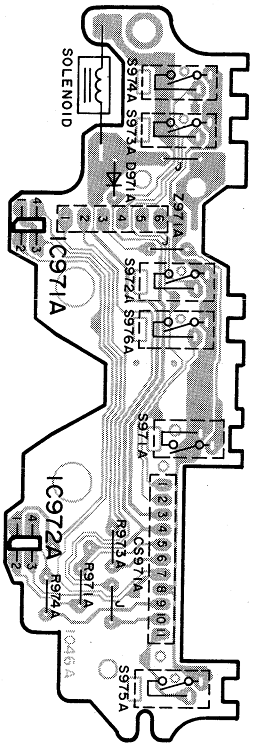
**A MAIN P.C.B. (REP2142A–M)**


ERASE CURRENT CHECK POINT
TP302
TP301
CAPSTAN MOTOR (DECK2)
CAPSTAN MOTOR (DECK1)
RM2
(REEL MOTOR /DECK 2)
RM1
(REEL MOTOR /DECK 1)
CP902
CP901
FW901A
CP305
CP306
CP102
CP101
IC802
IC801
IC701
IC101
IC102
IC103
IC201
S804 (CLOSE)
S803 (OPEN)
S802 (CLOSE)
S801 (OPEN)
X701
TP
Q803
Q111
Q301
Q304
Q303
Q305
Q306
Q302
Q104
Q115
Q116
Q101
Q103
Q107
Q102
Q112
Q706
Q804
Q801
Q802
Q114
Q105
Q113
Q106
Q702
Q701
Q703
Q602
Q605
Q604
Q603
Q607
Q606
Q601
Q609
LINE OUT POINT
(Lch)
TP201
TP202
(Rch)
A.GND
(Lch)
TP203
TP204
(Rch)
LINE IN POINT
JK601
ST–CA10
TP601
TP602
TP603
POWER SUPPLY POINT
TP604
TP605
FW501A
TP701
TP702
TP101
(DOLBY L)
(DOLBY R)
E1

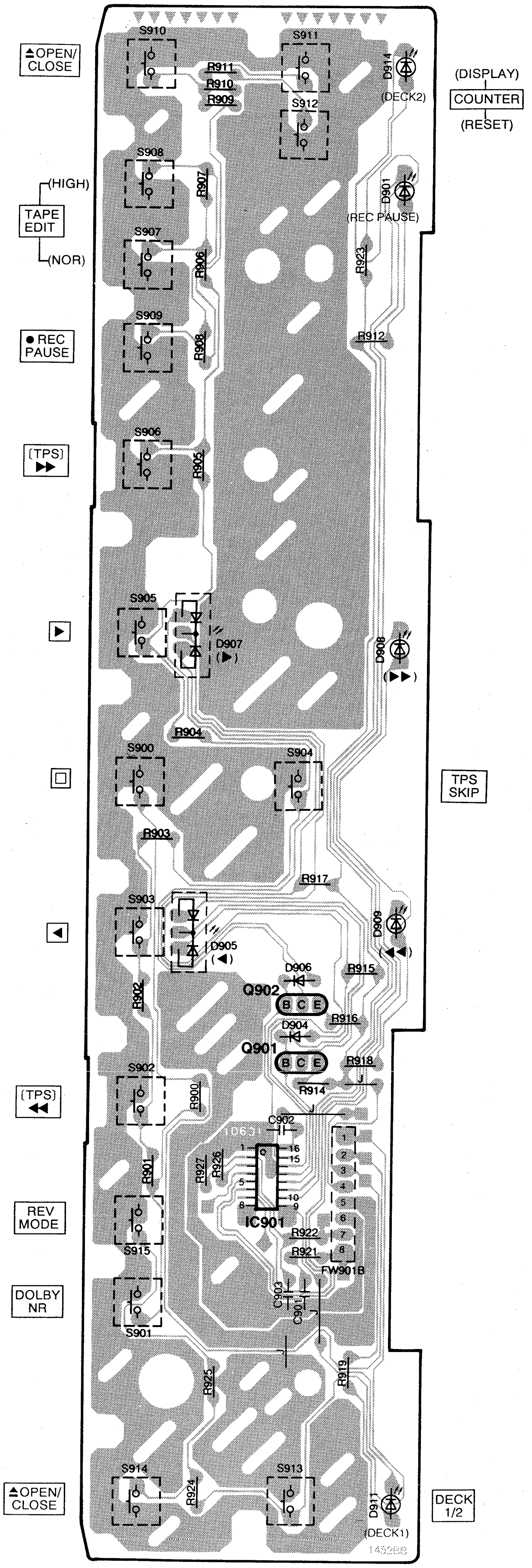
## **B** MECHANISM P.C.B.(DECK1) (REP1655A)


SOLENOID
S973
D971
IC971
S972
S971
IC972
CS971
R973
R971
R974
1 2 3 4 5 6 7 8 9

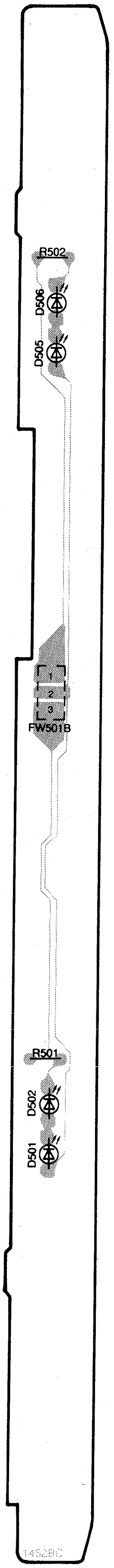
## **C** MECHANISM P.C.B.(DECK2) (REP1656A)


SOLENOID
S974A
S973A
D971A
Z971A
IC971A
S972A
S976A
S971A
IC972A
R973A
CS971A
R971A
R974A
S975A

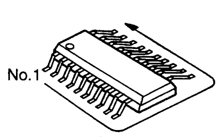
## **D** OPERATION P.C.B. (REP2142A–M)


▲OPEN/ CLOSE
S910
S911
R911
R910
R909
D914
(DECK2)
(DISPLAY)
COUNTER
(RESET)
S912
(HIGH)
TAPE EDIT
(NOR)
S908
R907
D901
(REC PAUSE)
S907
R906
R923
● REC PAUSE
S909
R908
R912
[TPS] ▶▶
S906
R905
▶
S905
D907 (▶)
D908 (▶▶)
R904
□
S900
S904
TPS SKIP
R903
R917
◀
S903
D905 (◀)
D909 (◀◀)
D906
R915
Q902
B C E
R916
D904
R902
Q901
R918
[TPS] ◀◀
S902
R900
R914
C902
R901
R927
R926
IC901
R922
R921
FW901B
REV MODE
S915
DOLBY NR
C903
C901
S901
R925
R919
▲OPEN/ CLOSE
S914
R924
S913
D911
(DECK1)
DECK 1/2

## **E** LED P.C.B. (REP2142A–M)

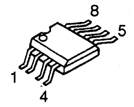

R502
D506
D505
FW501B
1 2 3
R501
D502
D501

## • Terminal guide of IC's, transistors and diodes

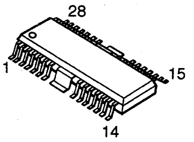


| | |
|---|---|
| MC14066BFEL | 14PIN |
| BU2040F-T2 | 16PIN |
| CXA1332M-T6 | 30PIN |

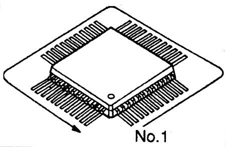
BA7755AF



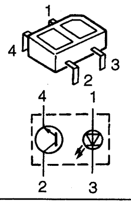
BA6265AFP-E1



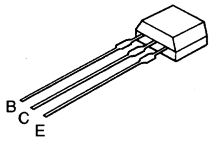
| | |
|---|---|
| A1898QT6BC | 48PIN |
| M37471M4264F | 56PIN |

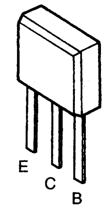


RVSGP2S24BC



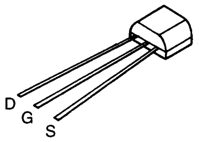
DTA114ESTP
DTC114YSTP
DTC144ESTP



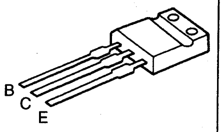


2SD1450RSTA
2SA1309AIRTA
2SC3311AIRTA
2SC3311ARSTA
UN4119TA

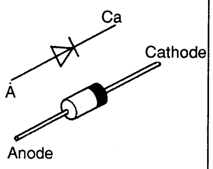
2SJ164RTA



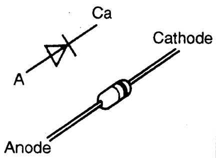
2SD2137PQTA

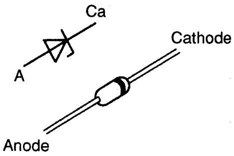


RL1N4003N02

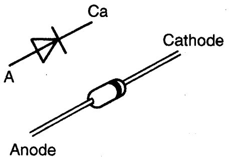

Ca
Cathode
A
Anode

MA188TA


Ca
Cathode
A
Anode

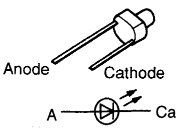

Ca
Cathode
A
Anode

MTZJ5R1BTA
MTZJ5R6BTA
MTZJ8R2CTA
MTZJ9R1BTA

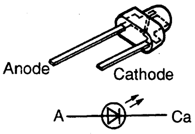

Ca
Cathode
A
Anode

MA165TA
MA723TA
RVD1SS133TA

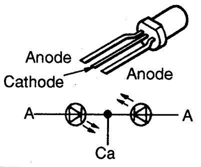
SLR-305VC


Anode
Cathode
A
Ca

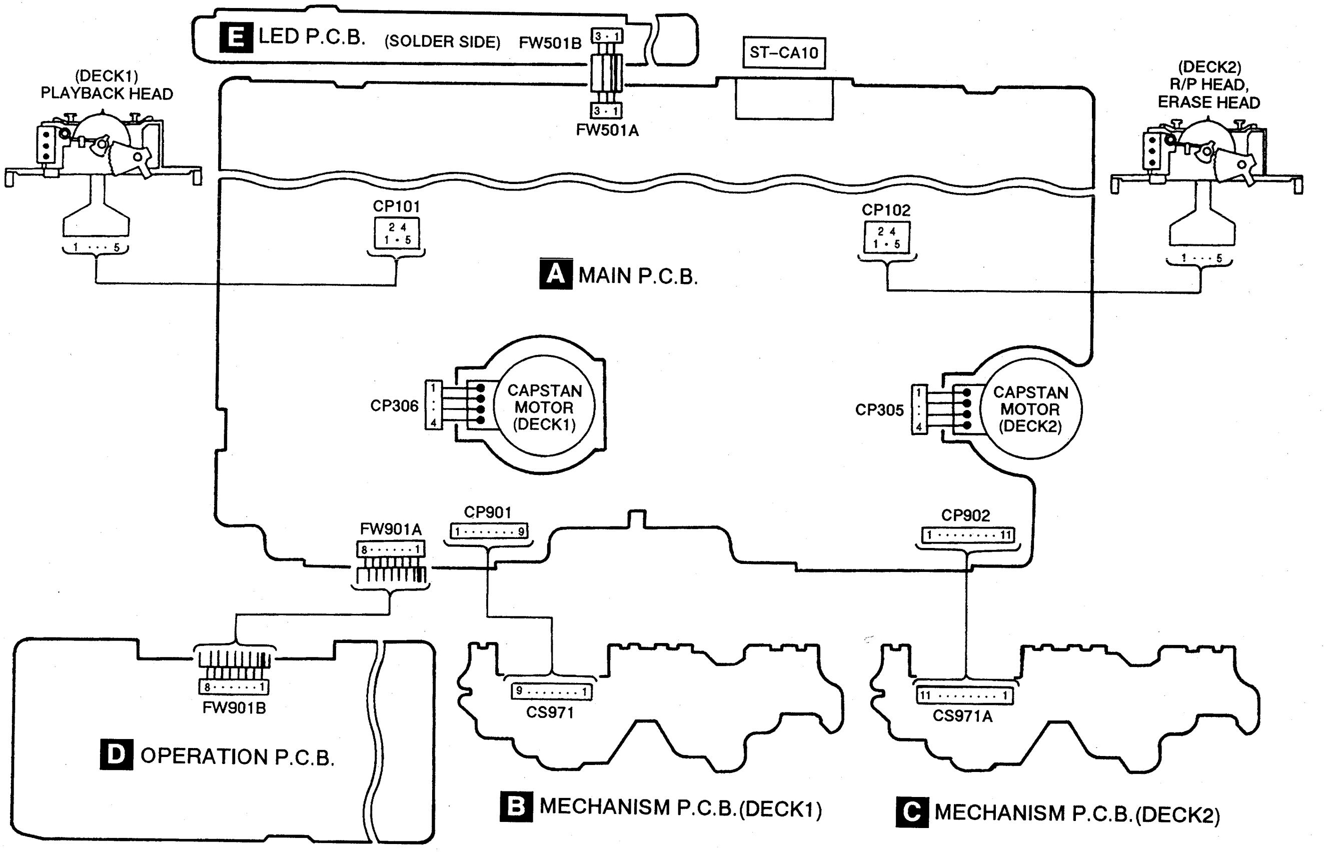
LNJ401NPYJA


Anode
Cathode
A
Ca

SPR505MDTT


Anode
Cathode
Anode
A
A
Ca

## ■WIRING CONNECTION DIAGRAM


E LED P.C.B. (SOLDER SIDE)
FW501B
3 · 1
3 · 1
FW501A
ST-CA10
(DECK1)
PLAYBACK HEAD
(DECK2)
R/P HEAD,
ERASE HEAD
1 ··· 5
1 ··· 5
CP101
2 4
1 · 5
CP102
2 4
1 · 5
A MAIN P.C.B.
CP306
1
4
CAPSTAN MOTOR (DECK1)
CP305
1
4
CAPSTAN MOTOR (DECK2)
FW901A
8 ······ 1
CP901
1 ······· 9
CP902
1 ········ 11
8 ······ 1
FW901B
D OPERATION P.C.B.
9 ······· 1
CS971
11 ········ 1
CS971A
B MECHANISM P.C.B.(DECK1)
C MECHANISM P.C.B.(DECK2)

# ■REPLACEMENT PARTS LIST

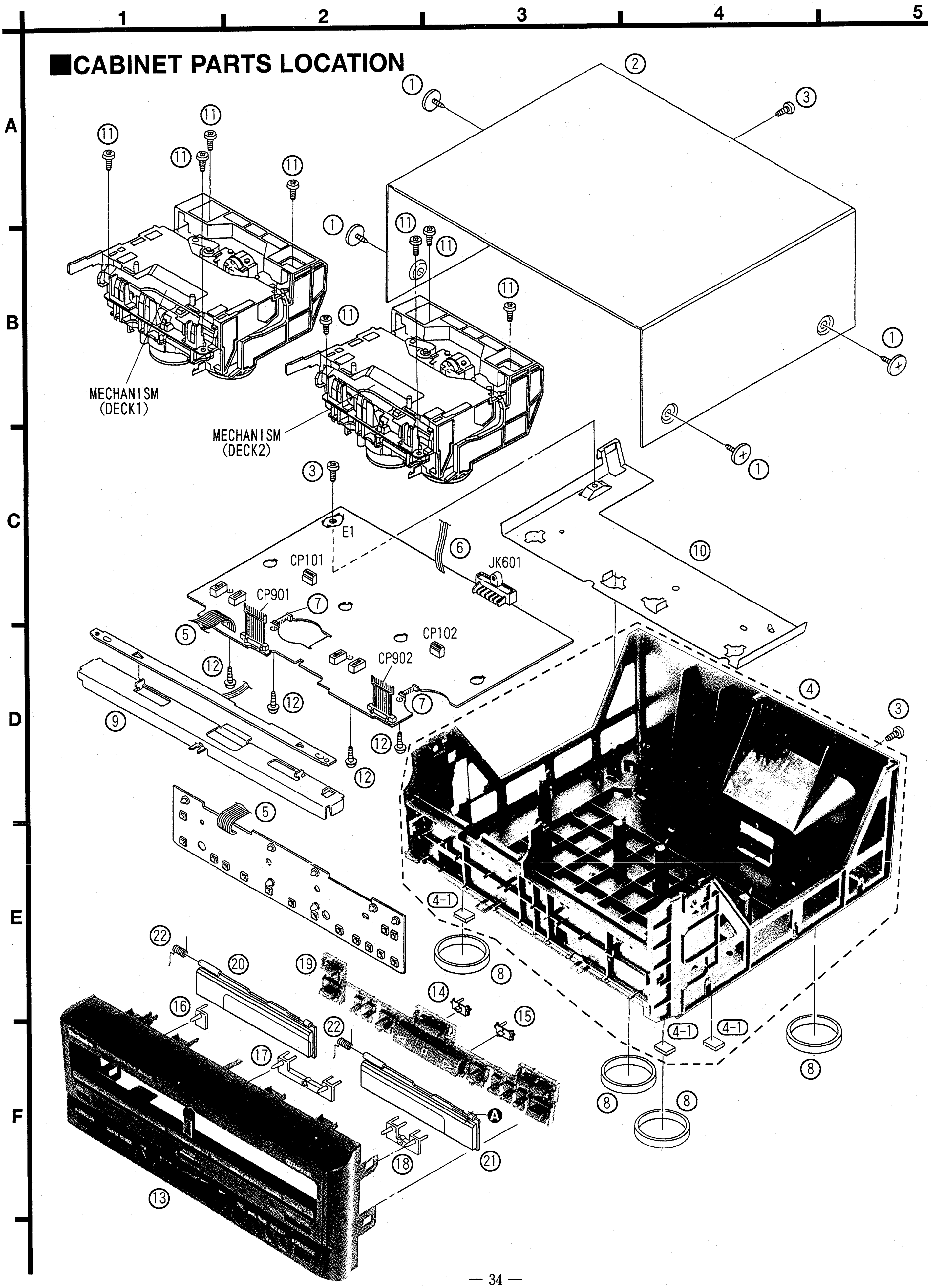
*** Notes:** * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* Remote Control Ass'y: Supply period for three years from termination of production.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC101 | A1898QT6BC | R/P EQ AMP | |
| IC102 | MC14066BFEL | DECK 1/2 SELECT | |
| IC103 | BA7755AF | R/P SELECT | |
| IC201 | CXA1332M-T6 | DOLBY NR | |
| IC701 | M37471M4264F | MICRO COMPUTER | |
| IC801, 802 | BA6265AFP-E1 | MECHANISM CONT. (DECK 1/2) | |
| IC901 | BU2040F-T2 | LED DRIVE | |
| IC971 | RVSGP2S24BC | PHOTO INTERRUPTER(DECK1) | |
| IC971A | RVSGP2S24BC | PHOTO INTERRUPTER(DECK2) | |
| IC972 | RVSGP2S24BC | PHOTO INTERRUPTER(DECK1) | |
| IC972A | RVSGP2S24BC | PHOTO INTERRUPTER(DECK2) | |
| | | | |
| | | TRANSISTOR(S) | |
| | | | |
| Q101-106 | 2SJ164RTA | TRANSISTOR | |
| Q107 | DTA114ESTP | TRANSISTOR | |
| Q111 | 2SC3311AIRTA | TRANSISTOR | |
| Q112 | DTA114ESTP | TRANSISTOR | |
| Q113, 114 | 2SD1450RSTA | TRANSISTOR | |
| Q115, 116 | 2SC3311ARSTA | TRANSISTOR | |
| Q301 | 2SC3311ARSTA | TRANSISTOR | |
| Q302-304 | 2SD1450RSTA | TRANSISTOR | |
| Q305, 306 | DTC144ESTP | TRANSISTOR | |
| Q601-605 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q606 | 2SC3311AIRTA | TRANSISTOR | |
| Q607 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q609 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q701-703 | 2SC3311ARSTA | TRANSISTOR | |
| Q706 | DTC114YSTP | TRANSISTOR | |
| Q801 | 2SA1309AIRTA | TRANSISTOR | |
| Q802 | 2SD1450RSTA | TRANSISTOR | |
| Q803 | 2SA1309AIRTA | TRANSISTOR | |
| Q804 | 2SD1450RSTA | TRANSISTOR | |
| Q901, 902 | UN4119 | TRANSISTOR | |
| | | | |
| | | DIODE(S) | |
| | | | |
| D301 | MA165 | DIODE | |
| D501, 502 | LNJ401NPYJA | L. E. D | |
| D505, 506 | LNJ401NPYJA | L. E. D | |
| D603-606 | RL1N4003N02 | DIODE | ⚠ |
| D609 | MA723TA | DIODE | |
| D610 | MTZJ9R1BTA | DIODE | ⚠ |
| D611 | MTZJ8R2CTA | DIODE | ⚠ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D612 | MTZJ5R6BTA | DIODE | ⚠ |
| D613 | MA723TA | DIODE | |
| D614, 615 | MA165 | DIODE | ⚠ |
| D616 | MA165 | DIODE | |
| D705, 706 | MA165 | DIODE | |
| D707 | MTZJ5R1BTA | DIODE | ⚠ |
| D801, 802 | MA188TA | DIODE | |
| D901 | SLR-305VC | L. E. D. | |
| D904 | MA165 | DIODE | |
| D905 | SPR505MDTT | L. E. D. | |
| D906 | MA165 | DIODE | |
| D907 | SPR505MDTT | L. E. D. | |
| D908, 909 | SLR-305VC | L. E. D. | |
| D911 | SLR-305VC | L. E. D. | |
| D914 | SLR-305VC | L. E. D. | |
| D971 | RVD1SS133TA | DIODE (DECK1) | |
| D971A | RVD1SS133TA | DIODE (DECK2) | |
| | | | |
| | | VARIABLE RESISTOR(S) | |
| | | | |
| VR101 | EVNDXAA00B24 | P. B. GAIN ADJ. (DECK1) (R) | |
| VR102 | EVNDXAA00B24 | P. B. GAIN ADJ. (DECK2) (L) | |
| VR103 | EVNDXAA00B24 | P. B. GAIN ADJ. (DECK2) (R) | |
| VR104 | EVNDXAA00B24 | P. B. GAIN ADJ. (DECK1) (L) | |
| VR801 | EVNDXAA00B53 | TAPE SPEED ADJ. (DECK1:X1) | |
| VR802 | EVNDXAA00B53 | TAPE SPEED ADJ. (DECK2:X2) | |
| VR803 | EVNDXAA00B53 | TAPE SPEED ADJ. (DECK2:X1) | |
| | | | |
| | | COIL(S) | |
| | | | |
| L205, 206 | ELELN103KA | COIL | |
| L301 | RL08C006M-T | COIL | |
| L302 | RLQZB101KT-D | COIL | |
| L701 | RLQA100JT-Y | COIL | |
| L702 | ELEXT1R0KA9 | COIL | |
| L801 | RLL500050T-Y | COIL | |
| | | | |
| | | OSCILLATOR(S) | |
| | | | |
| X701 | EF0EC8004T4 | OSCILLATOR(8MHz) | |
| | | | |
| | | COMBINATION PART(S) | |
| | | | |
| Z971A | EXBF6L306SYV | COMBINATION PART | |
| | | | |
| | | SWITCH(ES) | |
| | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| S801 | RSH1A024-U | OPEN DET. (DECK1) | |
| S802 | RSH1A024-U | CLOSE DET. (DECK1) | |
| S803 | RSH1A024-U | OPEN DET. (DECK2) | |
| S804 | RSH1A024-U | CLOSE DET. (DECK2) | |
| S900 | EVQ21405R | STOP | |
| S901 | EVQ21405R | DOLBY NR | |
| S902 | EVQ21405R | REW(TPS) | |
| S903 | EVQ21405R | R. PLAY | |
| S904 | EVQ21405R | TPS SKIP | |
| S905 | EVQ21405R | F. PLAY | |
| S906 | EVQ21405R | F. F. (TPS) | |
| S907 | EVQ21405R | NOR(TAPE EDIT) | |
| S908 | EVQ21405R | HIGH(TAPE EDIT) | |
| S909 | EVQ21405R | REC PAUSE | |
| S910 | EVQ21405R | OPEN/CLOSE(DECK2) | |
| S911 | EVQ21405R | DISPLAY(COUNTER) | |
| S912 | EVQ21405R | RESET(COUNTER) | |
| S913 | EVQ21405R | DECK 1/2 SELECT | |
| S914 | EVQ21405R | OPEN/CLOSE(DECK1) | |
| S915 | EVQ21405R | REV MODE | |
| S971 | RSH1A018-1U | MODE DET. (DECK1) | |
| S971A | RSH1A018-1U | MODE DET. (DECK2) | |
| S972 | RSH1A019-2U | HALF DET. (DECK1) | |
| S972A | RSH1A019-2U | HALF DET. (DECK2) | |
| S973 | RSH1A019-2U | ATS/CrO2(DECK1) | |
| S973A | RSH1A019-2U | ATS/CrO2(DECK2) | |
| S974A | RSH1A019-2U | R. REC. INH. (DECK2) | |
| S975A | RSH1A019-2U | F. REC. INH. (DECK2) | |
| S976A | RSH1A019-2U | ATS/METAL(DECK2) | |
| | | | |
| | | CONNECTOR(S) AND SOCKET(S) | |
| | | | |
| CP101, 102 | RJS2A0205-2S | CONNECTOR(5P) | |
| CP901 | RJT071H09A | CONNECTOR(9P) | |
| CP902 | RJT071H11A | CONNECTOR(11P) | |
| CS971 | RJU071H09M | SOCKET(9P)(DECK1) | |
| CS971A | RJU071H11M | SOCKET(11P)(DECK2) | |
| JK601 | RJT065K15 | CONNECTOR(15P) | |
| | | | |
| | | EARTH PLATE(S) | |
| | | | |
| E1 | SNE1004-2 | EARTH PLATE | |

# ■CABINET PARTS LOCATION


1
2
3
4
5
A
B
C
D
E
F
①
②
③
⑪
MECHANISM (DECK1)
MECHANISM (DECK2)
E1
CP101
⑥
JK601
⑩
CP901
⑦
⑤
CP102
CP902
⑫
⑨
④
4-1
⑧
㉒
⑳
⑲
⑭
⑮
⑯
⑰
Ⓐ
⑱
㉑
⑬

## ■REPLACEMENT PARTS LIST

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | CABINET AND CHASSIS | |
| | | | |
| 1 | RHD30007-K1 | SCREW | |
| 2 | RKM0290-K | CABINET | |
| 3 | XTBS3+8JFZ1 | SCREW | |
| 4 | RFKJSCA10E-K | FRAME ASS'Y | |
| 4-1 | SHG1654 | RUBBER FOOT | |
| 5 | RWJ1808090KK | FLAT CABLE(8P) (W901) | |
| 6 | RWJ1803340KK | FLAT CABLE(3P) (FW501) | |
| 7 | RJR0113 | CONNECTOR(4P) (CP305, CP306) | |
| 8 | RKA0068-N | SET FOOT | |
| 9 | RMA0858 | REINFORCING ANGLE | |
| 10 | RSC0414 | SHIELD PLATE | |
| 11 | XTB3+10JFZ | SCREW | |
| 12 | XTW2+6S | SCREW | |
| 13 | RFKGSCA10E-K | FRONT PANEL ASS'Y | |
| 14 | RGL0277-Q | PLAY LIGHT PLATE(L) | |
| 15 | RGL0278-Q | PLAY LIGHT PLATE(R) | |
| 16 | RGL0316-Q | PANEL LIGHT(A) | |
| 17 | RGL0317-Q | PANEL LIGHT(B) | |
| 18 | RGL0318-Q | PANEL LIGHT(C) | |
| 19 | RGU1347-1S | OPERATION BUTTON | |
| 20 | RKW0434-K | CASSETTE DOOR(L) | |
| 21 | RKW0435-K | CASSETTE DOOR(R) | |
| 22 | RMB0398 | CASSETTE DOOR SPRING | |
| | | | |
| | | MECHANISM PARTS | |
| | | | |
| 201 | RXF0045 | FLYWHEEL(F) ASS'Y | |
| 201-1 | RMQ0420 | WASHER | |
| 202 | RXF0046 | FLYWHEEL(R) ASS'Y | |
| 202-1 | RMQ0421 | WASHER | |
| 203 | RML0272 | SWITCH LEVER | |
| 204 | RXQ0265 | HEAD BASE ASS'Y | |
| 204-1 | RMB0266-1 | SPRING | |
| 204-2 | RXM0036 | ROD | |
| 205 | XYC2+JF16 | SCREW | |
| 206 | RFKRSTR777 | HEAD BLOCK(P.B:DECK1)ASS'Y | |
| 206 | RFKRSTR979 | HEAD BLOCK(R/P:DECK2)ASS'Y | |
| 206-1 | RHD17015 | AZIMUTH SCREW | |
| 206-2 | RMB0352-1 | SPRING | |
| 206-3 | RMQ0360A | CONNECTOR HOLDER | |
| 207 | RDV108ZA | BELT | |
| 208 | RDK0019A-1J | MAIN GEAR | |
| 209 | RMB0261 | SPRING | |
| 210 | RMB0262 | SPRING | |
| 211 | RMB0263 | SPRING | |
| 212 | RMB0264 | SPRING | |
| 213 | RUW147ZA | SPRING | |
| 214 | RML0267A | LEVER | |
| 215 | RML0268A | LEVER | |
| 216 | RMM0091A | ROD | |
| 217 | RMS0398-1 | MOVING IRON CORE | |
| 218 | RSJ0003 | SOLENOID | |
| 219 | RUS609ZC | SPRING | |
| 220 | RXG0036 | REEL TABLE GEAR | |
| 221 | RXL0106 | IDLER LEVER | |
| 222 | RXP0052 | PINCH ROLLER(F) ASS'Y | |
| 222-1 | RMB0259 | SPRING | |
| 223 | RXP0053 | PINCH ROLLER(R) ASS'Y | |
| 223-1 | RMB0260 | SPRING | |
| 224 | RDG0206A-1 | GEAR | |
| 225 | RDG0209A | GEAR | |
| 226 | REM0036-1 | CAPSTAN MOTOR ASS'Y | |
| 227 | REM0043 | REEL MOTOR ASS'Y | |
| 228 | RHD26013 | SCREW | |
| 229 | RMQ0537 | DRIVE GEAR | |
| 230 | RMQ0314A | SPACER | |
| 231 | RXG0037 | GEAR ASS'Y | |
| 232 | RMQ0536 | DRIVE RACK | |
| 233 | RYF0334-K | CASSTTE HOLDER ASS'Y | |
| 233-1 | RUS757ZA | SPRING | |
| 233-2 | RMB0397 | SPRING | |
| 234 | RFKJSCA7NB | MAIN CHASSIS ASS'Y | |
| 235 | RFKJSCA7NA | SUB CHASSIS ASS'Y | |
| 236 | XTW26+6L | SCREW | |
| 237 | RMB0268 | SPRING | |
| 238 | RML0271A | LEVER | |
| 239 | XTW2+6S | SCREW | |
| 240 | RXR0018 | REEL TABLE | |
| 241 | XTW2+5L | SCREW | |
| 242 | XTW26+12S | SCREW | |
| | | | |
| | | <GREASE OR JIG/TOOL> | |
| | | TEST TAPE | |
| | | | |
| SA1 | QZZCFM | HEAD AZIMUTH ADJ. CHECK | |
| SA2 | QZZCWAT | TAPE SPEED ADJ. CHECK | |
| | | | |
| | | GREASE | |
| | | | |
| SA3 | SZZ0L18 | FLOIL AK-152 | |
| SA4 | RZZ0L02 | SWAFLUID #56 | |
| SA5 | RZZ0L05 | MOLYCOAT EM-20L | |

# RESISTORS AND CAPACITORS

**Notes:** * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

| Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | R223, 224 | ERDS2TJ222 | 1/4W 2.2K | R738 | ERDS2TJ102 | 1/4W 1K |
| | | RESISTORS | R225, 226 | ERDS2TJ243T | 1/4W 24K | R739 | ERDS2TJ272T | 1/4W 2.7K |
| | | | R227, 228 | ERDS2TJ561 | 1/4W 560 | R740 | ERDS2TJ473 | 1/4W 47K |
| R101, 102 | ERDS2TJ682T | 1/4W 6.8K | R229 | ERDS2TJ102 | 1/4W 1K | R741 | ERDS2TJ123 | 1/4W 12K |
| R103, 104 | ERDS2TJ104 | 1/4W 100K | R230 | ERDS2TJ222 | 1/4W 2.2K | R742 | ERDS2TJ103 | 1/4W 10K |
| R105, 106 | ERDS2TJ102 | 1/4W 1K | R232 | ERDS2TJ273 | 1/4W 27K | R743, 744 | ERDS2TJ102 | 1/4W 1K |
| R107, 108 | ERDS2TJ820 | 1/4W 82 | R237, 238 | ERDS2TJ122 | 1/4W 1.2K | R801-804 | ERDS2TJ103 | 1/4W 10K |
| R110 | ERDS2TJ334 | 1/4W 330K | R301 | ERDS2TJ103 | 1/4W 10K | R805 | ERDS2TJ392T | 1/4W 3.9K |
| R113, 114 | ERDS2TJ103 | 1/4W 10K | R302 | ERDS2TJ182 | 1/4W 1.8K | R806, 807 | ERDS2TJ103 | 1/4W 10K |
| R115, 116 | ERDS2TJ472 | 1/4W 4.7K | R303 | ERDS2TJ682T | 1/4W 6.8K | R808 | ERDS2TJ392T | 1/4W 3.9K |
| R117 | ERDS2TJ123 | 1/4W 12K | R304 | ERDS2TJ223 | 1/4W 22K | R809 | ERDS2TJ682T | 1/4W 6.8K |
| R118 | ERDS2TJ102 | 1/4W 1K | R305 | ERDS2TJ123 | 1/4W 12K | R810 | ERDS2TJ103 | 1/4W 10K |
| R119, 120 | ERDS2TJ330 | 1/4W 33 | R306 | ERDS2TJ223 | 1/4W 22K | R811-813 | ERDS2TJ272T | 1/4W 2.7K |
| R121 | ERDS2TJ475T | 1/4W 4.7M | R307 | ERDS1FVJ2R2T | 1/2W 2.2 ⚠ | R814, 815 | ERDS2TJ152 | 1/4W 1.5K |
| R123-126 | ERDS2TJ104 | 1/4W 100K | R308 | ERDS2TJ102 | 1/4W 1K | R816 | ERDS2TJ272T | 1/4W 2.7K |
| R127, 128 | ERDS2TJ222 | 1/4W 2.2K | R309-311 | ERDS2TJ472 | 1/4W 4.7K | R817 | ERDS2TJ105T | 1/4W 1M |
| R129 | ERDS2TJ333 | 1/4W 33K | R313 | ERDS2TJ1R0 | 1/4W 1.0 | R818 | ERDS2TJ2R2T | 1/4W 2.2 |
| R130 | ERDS2TJ273 | 1/4W 27K | R501, 502 | ERDS2TJ151 | 1/4W 150 | R819 | ERDS2TJ105T | 1/4W 1M |
| R131 | ERDS2TJ562 | 1/4W 5.6K | R601, 602 | ERDS2TJ472 | 1/4W 4.7K | R820 | ERDS2TJ2R2T | 1/4W 2.2 |
| R132 | ERDS2TJ104 | 1/4W 100K | R603 | ERDS2TJ221 | 1/4W 220 | R821 | ERDS2TJ391 | 1/4W 390 |
| R133 | ERDS2TJ103 | 1/4W 10K | R605 | ERD2FCVJ4R7T | 1/4W 4.7 ⚠ | R822 | ERDS2TJ331 | 1/4W 330 |
| R134 | ERDS2TJ473 | 1/4W 47K | R607 | ERD2FCVG100T | 1/4W 10 ⚠ | R900 | ERDS2TJ821 | 1/4W 820 |
| R135 | ERDS2TJ334 | 1/4W 330K | R609 | ERDS2TJ470 | 1/4W 47 | R901 | ERDS2TJ102 | 1/4W 1K |
| R136 | ERDS2TJ473 | 1/4W 47K | R610 | ERDS2TJ152 | 1/4W 1.5K | R902 | ERDS2TJ122 | 1/4W 1.2K |
| R137 | ERDS2TJ334 | 1/4W 330K | R611-613 | ERDS2TJ1R0 | 1/4W 1.0 | R903 | ERDS2TJ152 | 1/4W 1.5K |
| R141 | ERDS2TJ103 | 1/4W 10K | R614 | ERDS2TJ222 | 1/4W 2.2K | R904 | ERDS2TJ182 | 1/4W 1.8K |
| R142, 143 | ERDS2TJ562 | 1/4W 5.6K | R615 | ERDS2TJ332 | 1/4W 3.3K | R905 | ERDS2TJ222 | 1/4W 2.2K |
| R145 | ERDS2TJ183T | 1/4W 18K | R616 | ERDS2TJ103 | 1/4W 10K | R906 | ERDS2TJ332 | 1/4W 3.3K |
| R147-150 | ERDS2TJ562 | 1/4W 5.6K | R626-630 | ERDS2TJ1R0 | 1/4W 1.0 | R907 | ERDS2TJ472 | 1/4W 4.7K |
| R153, 154 | ERDS2TJ681 | 1/4W 680 | R631 | ERDS2TJ561 | 1/4W 560 | R908 | ERDS2TJ682T | 1/4W 6.8K |
| R157, 158 | ERDS2TJ223 | 1/4W 22K | R701, 702 | ERDS2TJ103 | 1/4W 10K | R909 | ERDS2TJ123 | 1/4W 12K |
| R159 | ERDS2TJ104 | 1/4W 100K | R704 | ERDS2TJ472 | 1/4W 4.7K | R910 | ERDS2TJ223 | 1/4W 22K |
| R160 | ERDS2TJ103 | 1/4W 10K | R705 | ERDS2TJ473 | 1/4W 47K | R911 | ERDS2TJ683 | 1/4W 68K |
| R165, 166 | ERDS2TJ104 | 1/4W 100K | R707, 708 | ERDS2TJ472 | 1/4W 4.7K | R912 | ERDS2TJ471 | 1/4W 470 |
| R167-169 | ERDS2TJ222 | 1/4W 2.2K | R710 | ERDS2TJ102 | 1/4W 1K | R914-917 | ERDS2TJ681 | 1/4W 680 |
| R170 | ERDS2TJ472 | 1/4W 4.7K | R711 | ERDS2TJ104 | 1/4W 100K | R918, 919 | ERDS2TJ471 | 1/4W 470 |
| R171 | ERDS2TJ682T | 1/4W 6.8K | R712, 713 | ERDS2TJ683 | 1/4W 68K | R921, 922 | ERDS2TJ102 | 1/4W 1K |
| R172, 173 | ERDS2TJ122 | 1/4W 1.2K | R715 | ERDS2TJ472 | 1/4W 4.7K | R923 | ERDS2TJ471 | 1/4W 470 |
| R174, 175 | ERDS2TJ103 | 1/4W 10K | R718 | ERDS2TJ683 | 1/4W 68K | R924 | ERDS2TJ821 | 1/4W 820 |
| R176 | ERDS2TJ392T | 1/4W 3.9K | R720 | ERDS2TJ683 | 1/4W 68K | R925 | ERDS2TJ102 | 1/4W 1K |
| R177 | ERDS2TJ273 | 1/4W 27K | R721 | ERDS2TJ103 | 1/4W 10K | R926, 927 | ERDS2TJ473 | 1/4W 47K |
| R178 | ERDS2TJ334 | 1/4W 330K | R722 | ERDS2TJ562 | 1/4W 5.6K | R971 | ERDS2TJ221 | 1/4W 220 |
| R181, 182 | ERDS2TJ103 | 1/4W 10K | R725 | ERDS2TJ103 | 1/4W 10K | R971A | ERDS2TJ221 | 1/4W 220 |
| R207, 208 | ERDS2TJ104 | 1/4W 100K | R727 | ERDS2TJ472 | 1/4W 4.7K | R973 | ERDS2TJ393 | 1/4W 39K |
| R209, 210 | ERDS2TJ332 | 1/4W 3.3K | R728 | ERDS2TJ332 | 1/4W 3.3K | R973A | ERDS2TJ393 | 1/4W 39K |
| R213, 214 | ERDS2TJ122 | 1/4W 1.2K | R729 | ERDS2TJ472 | 1/4W 4.7K | R974 | ERDS2TJ393 | 1/4W 39K |
| R215, 216 | ERDS2TJ822 | 1/4W 8.2K | R733 | ERDS2TJ473 | 1/4W 47K | R974A | ERDS2TJ393 | 1/4W 39K |
| R220 | ERDS2TJ470 | 1/4W 47 | R735 | ERDS2TJ472 | 1/4W 4.7K | | | |
| R221, 222 | ERDS2TJ221 | 1/4W 220 | R736 | ERDS2TJ103 | 1/4W 10K | | | CAPACITORS |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C101, 102 | ECBT1H221KB5 | 50V 220P |
| C103, 104 | ECBT1H561KB5 | 50V 560P |
| C105, 106 | ECEA1EKA4R7B | 25V 4.7U |
| C107, 108 | RCE0JKA470BG | 6.3V 47U |
| C109, 110 | ECBT1H561KB5 | 50V 560P |
| C111, 112 | ECQB1H183JF3 | 50V 0.018U |
| C113, 114 | ECBT1H331KB5 | 50V 330P |
| C115, 116 | ECEA1EKA4R7B | 25V 4.7U |
| C119, 120 | ECEA1EKA4R7B | 25V 4.7U |
| C121 | ECEA1HKAR33B | 50V 0.33U |
| C123 | ECQB1H153JF3 | 50V 0.015U |
| C124 | ECBT1H102KB5 | 50V 1000P |
| C125 | ECEA1AKA220B | 10V 22U |
| C126 | RCE1AKA101BG | 10V 100U |
| C127 | RCE1CKA100BG | 16V 10U |
| C128 | RCE0JKA470BG | 6.3V 47U |
| C130-132 | ECBT1H101KB5 | 50V 100P |
| C133 | ECEA1HKA010B | 50V 1U |
| C134 | RCE1HKA3R3BG | 50V 3.3U |
| C137 | ECEA1HKA010B | 50V 1U |
| C139, 140 | ECEA1EKA4R7B | 25V 4.7U |
| C141-144 | ECBT1H471KB5 | 50V 470P |
| C145, 146 | ECBT1C332KR5 | 16V 3300P |
| C150 | ECBT1H104ZF5 | 50V 0.1U |
| C203, 204 | ECEA1EKA4R7B | 25V 4.7U |
| C205, 206 | ECEA1HKA010B | 50V 1U |
| C211, 212 | ECBA1H681KB5 | 50V 680P |
| C213, 214 | ECEA1EKA4R7B | 25V 4.7U |
| C215, 216 | RCE1CKA100BG | 16V 10U |
| C217, 218 | ECEA1HKAR68B | 50V 0.68U |
| C219 | RCE1CKA101BV | 16V 100U |
| C221, 222 | RCE1HKA2R2BG | 50V 2.2U |
| C225, 226 | ECBT1H221KB5 | 50V 220P |
| C227, 228 | ECBT1C682KR5 | 16V 6800P |
| C229-232 | ECQB1H222JF3 | 50V 2200P |
| C235, 236 | ECEA1HKAR33B | 50V 0.33U |
| C237 | ECEA1EKA330B | 25V 33U |
| C238 | RCE1CKA100BG | 16V 10U |
| C239, 240 | ECBT1C122KR5 | 16V 1200P |
| C302 | ECEA2AN2R2SB | 100V 2.2U |
| C303 | ECQP2E472JZT | 250V 4700P |
| C304 | ECA1AKF820B | 10V 82U |
| C305 | ECEA1HKA0R1B | 50V 0.1U |
| C306 | ECQB1H393JF3 | 50V 0.039U |
| C307 | ECBT1H102KB5 | 50V 1000P |
| C308 | ECBT1C332KR5 | 16V 3300P |
| C309 | RCE0JKA470BG | 6.3V 47U |
| C310, 311 | ECBT1C103KS5 | 16V 0.01U |
| C323 | ECBT1H102KB5 | 50V 1000P |
| C601, 602 | ECFR1H104ZF | 50V 0.1U |
| C603, 604 | ECA1CM222B | 16V 2200U ⚠ |
| C606 | ECA1HM101B | 50V 100U |
| C607 | ECA1AM471B | 10V 470U |
| C608 | RCE1AKA101BG | 10V 100U |
| C609 | ECBT1E103ZF | 25V 0.01U |
| C611 | ECEA1HKA010B | 50V 1U |
| C613 | RCE1AKA470BG | 10V 47U |
| C614, 615 | ECBT1E103ZF | 25V 0.01U |
| C617 | ECBT1H102KB5 | 50V 1000P |
| C701 | ECBT1C105ZF5 | 16V 1U |
| C702 | RCE0JKA101BV | 6.3V 100U |
| C705 | ECBT1E103ZF | 25V 0.01U |
| C706 | RCE1HKA3R3BG | 50V 3.3U |
| C707, 708 | ECBT1E103ZF | 25V 0.01U |
| C801, 802 | ECBT1H101KB5 | 50V 100P |
| C803 | ECBT1H104ZF5 | 50V 0.1U |
| C804 | ECEA1EKA470B | 25V 47U |
| C805 | ECBT1H101KB5 | 50V 100P |
| C807 | RCE1AKA101BG | 10V 100U |
| C809 | ECBT1E223ZF | 25V 0.022U |
| C810 | ECBT1H104ZF5 | 50V 0.1U |
| C811 | ECEA1EKA470B | 25V 47U |
| C812 | ECBT1H101KB5 | 50V 100P |
| C813 | RCE1AKA101BG | 10V 100U |
| C814, 815 | ECBT1H101KB5 | 50V 100P |
| C816 | ECBT1E223ZF | 25V 0.022U |
| C818 | ECBT1H104ZF5 | 50V 0.1U |
| C901 | ECBT1H471KB5 | 50V 470P |
| C902 | ECBT1H104ZF5 | 50V 0.1U |
| C903 | ECBT1H471KB5 | 50V 470P |

Printed in Japan
H951212000 NH/HH

ORDER NO. AD9512269C8

# Service Manual

CD Changer

Compact Disc Changer

## SL-CA10

COMPACT disc DIGITAL AUDIO

DIGITAL

MASH※
multi-stage noise shaping

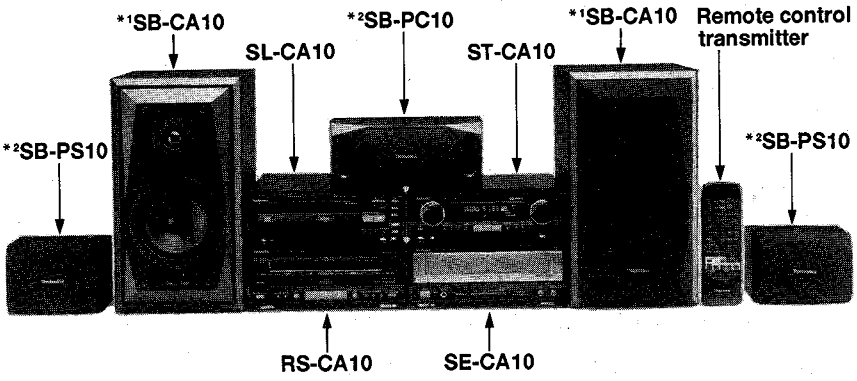
**Colour**

(K)...Black Type

**Area**

| Suffix for Model No. | Area | Colour |
|---|---|---|
| (E) | Europe, Asia, Latin America, Middle East, Africa and Oceania. | (K) |

**System: SC-CA10**



**Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.**

**RAE0150Z MECHANISM SERIES**

## ■SPECIFICATIONS

**■Audio**

| | |
|---|---|
| **DA converter** | 1 bit 2 DAC MASH※ |

**■Pickup**

| | |
|---|---|
| **Wavelength** | 780 nm |

**■General**

| | |
|---|---|
| **Dimensions (W×H×D)** | 280×89×331 mm |
| **Weight** | 2.5 kg |

**Notes:**

1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

※ MASH is a trademark of NTT.

| System | Tuner | CD changer | Amplifier | Cassette deck | Speakers |
|---|---|---|---|---|---|
| SC-CA10 | ST-CA10 | SL-CA10 | SE-CA10 | RS-CA10 | *¹ SB-CA10<br>*² SB-PC10 (Center)<br>(SB-PC10+SB-PS10) |

*1 Made in PAES
*2 For (E, EB, EG) Areas.....Made in PAES
For (GC, GN) Areas.....Made in NABEL

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

**Technics®**

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**NOTE:**
**Refer to the service manual for Model No. SE-CA10 (ORDER No. AD9512272C8) for information on “ACCESSORIES”, “INSTALLATION ”, “CONNECTIONS” and “PACKAGING”.**

# ■PRECAUTION OF LASER DIODE

**CAUTION:** This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted from the pickup lens.
Wave length: 780 nm
Maximum output radiation power from pickup: 100 μW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

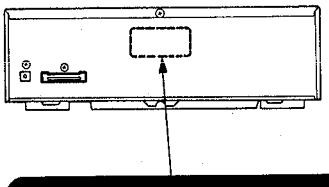
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

**ACHTUNG:** Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 μW/VDE

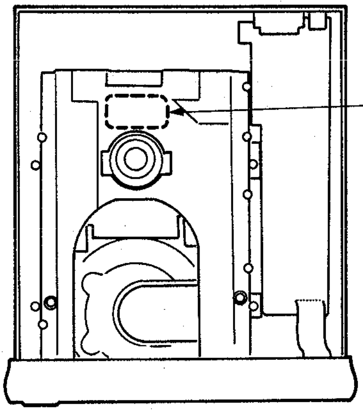
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.



CLASS 1
LASER PRODUCT

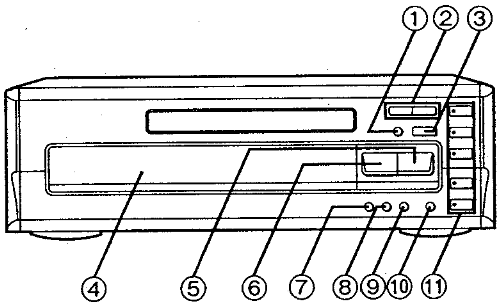
**LUOKAN 1 LASERLAITE**
**KLASS 1 LASER APPARAT**



| | |
|---|---|
| DANGER | INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. |
| ADVARSEL | USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING. |
| VARO! | AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN. |
| VARNING | OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN. |
| ADVARSEL | USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN. |
| VORSICHT | UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN. RQLS0104 |

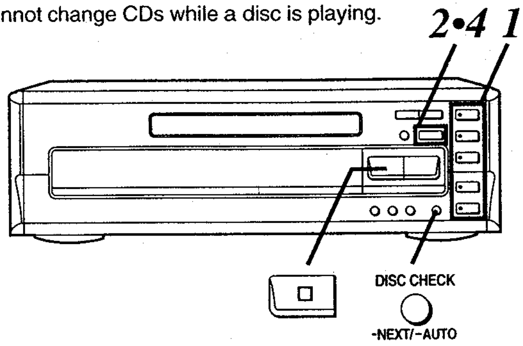
CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

# ■ LOCATION OF CONTROL



# ■ LISTENING TO COMPACT DISCS

Always stop the changer before loading or changing CDs. You cannot change CDs while a disc is playing.



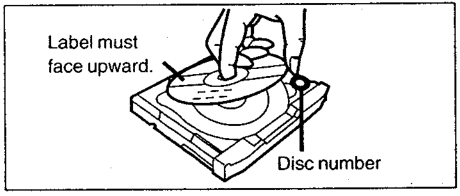
## *How to load CDs*

1 **Press DISC 1–5, whichever you want to open.**

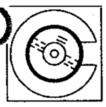
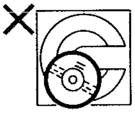
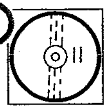
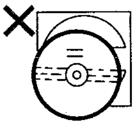
2 **Press ▲ OPEN/CLOSE.**

3 **Set the CD in the tray.**

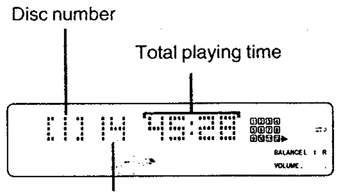
- How to hold CDs



- Load CDs as shown below.

| | | |
|---|---|---|
| 8 cm CD | ○  | ×  |
| 12 cm CD | ○  | ×  |

4 **Press ▲ OPEN/CLOSE.**
The open tray will close.



① **Pause button (❚❚)**
② **Skip/search buttons (SKIP/SEARCH)**
③ **Disc tray open/close button (▲ OPEN/CLOSE)**
④ **Disc tray**
⑤ **Play button and indicator (▷)**
⑥ **Stop button (□)**
⑦ **Random play button (RANDOM)**
⑧ **Repeat button (REPEAT)**
⑨ **AI edit button (AI EDIT)**
⑩ **Disc check button (DISC CHECK)**
⑪ **Disc select buttons and indicators (DISC)**

5 **To load other CDs, repeat steps 1 through 4.**

**For your reference:**
If the tray you want to open is already shown on the display, you obviously do not need to perform step 1.

## *How to check which trays have discs*

DISC CHECK is a convenient way to know what discs you have in your changer and where.

**Press DISC CHECK (-NEXT).**
Not the disc number shown on the display, but the next tray after that will open. For example, when disc 4 is displayed, tray 5 will open.

- Every time you press the button, the next tray opens.
- You can change the CD while the tray is open.
- To close the tray, press ▲ OPEN/CLOSE.

**Hold down DISC CHECK (–AUTO).**
The trays will open (and close) automatically one after another. The first one to open will be the next tray after the disc number shown on the display. This way, you can check all trays in a row.

- To stop the auto check in course, press □.

**Note**

Do not attempt to change CDs while trays are opening and closing in the auto check.

## *Disc indicators*

When you open or close a tray with the ▲ OPEN/CLOSE button, the changer automatically detects whether there is a CD in the tray or not. The indicator will act as follows.

| | |
|---|---|
| ● (red) | There's a CD in the tray. |
| Out | There isn't a CD in the tray. |

While the CD is playing, its indicator is green.

**Note**

In the following cases, CD detection is OFF. The indicators will be red whether there is a disc in the tray or not.

- When the tray is closed with DISC CHECK
- When the tray is closed with DISC 1–5
- When the tray is closed by selecting a mode other than CD

**For your reference:**
While the CD changer is changing discs, the disc indicators act as follows.

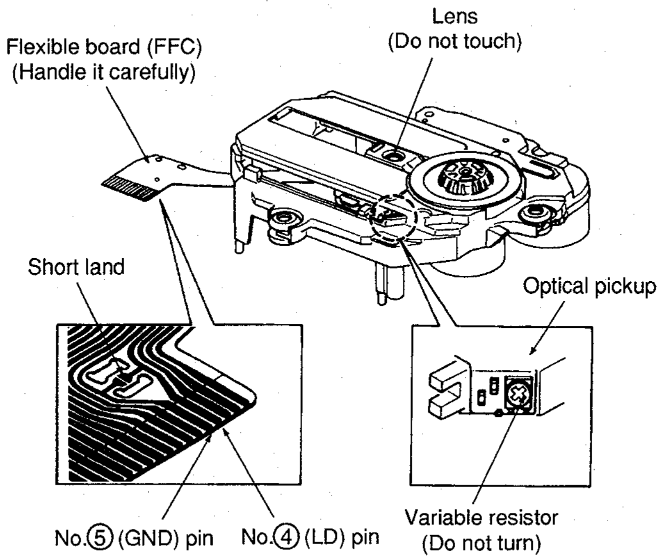
- All the indicators the changer skips through will flash.
- The indicator of the selected disc (or last disc in auto DISC CHECK) will light up.

# ■HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

**• Handling of traverse deck (optical pickup)**

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. ④ (LD) and No. ⑤ (GND) pins on the flexible board (FFC) is shorted with a solder build-up to prevent damage to the laser diode.
   To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

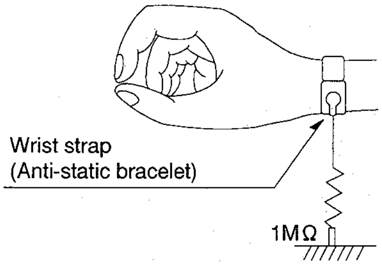

Lens
(Do not touch)
Flexible board (FFC)
(Handle it carefully)
Short land
Optical pickup
No.⑤ (GND) pin
No.④ (LD) pin
Variable resistor
(Do not turn)

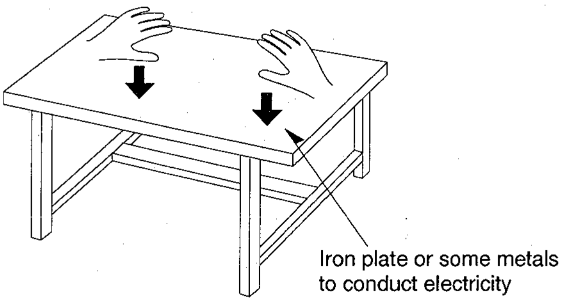
**• Grounding for electrostatic breakdown prevention**

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

**Caution:**

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).


Wrist strap
(Anti-static bracelet)
1MΩ


Iron plate or some metals
to conduct electricity

# ■ Operation Check and Main Component Replacement Procedures

**NOTE**

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

## • Contents

**• CD Changer Disassembly / Reassembly**

page.
1. Removal for the CD changer unit. •••••••••••••••••••••••••••••••••••••••••••••••••••••• 5.
2. Removal for the traverse unit. •••••••••••••••••••••••••••••••••••••••••••••••••••••• 7.
3. Disassembly for the CD changer unit. •••••••••••••••••••••••••••••••••••••••••••••••••••• 7,8.
4. Reassembly for the CD changer unit. •••••••••••••••••••••••••••••••••••••••••••••••••••• 9~12.
5. Inspection for the CD changer unit. •••••••••••••••••••••••••••••••••••••••••••••••••••• 12.

**• Checking Procedures for each P.C.B.**

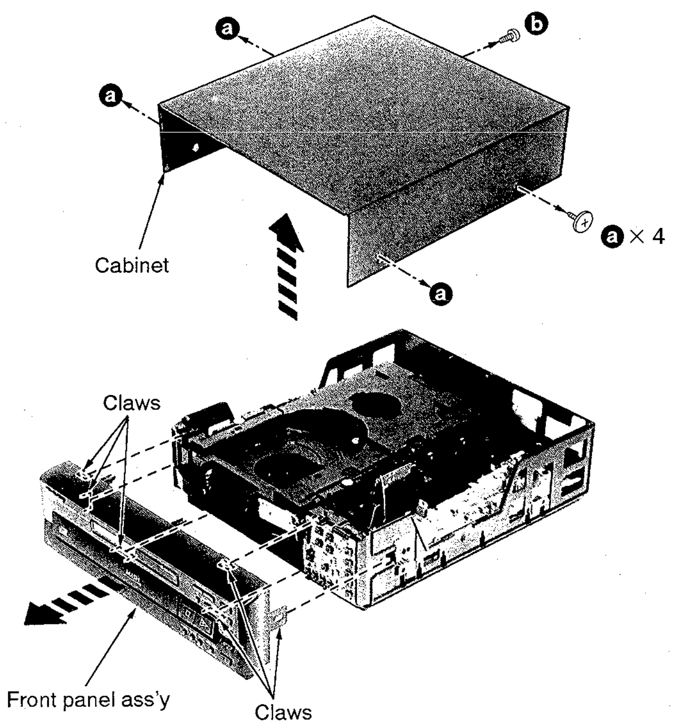
1. Checking for the main P.C.B. and the operation P.C.B.. •••••••••••••••••••••••••••••••••••• 13.
2. Checking for the servo P.C.B.. •••••••••••••••••••••••••••••••••••••••••••••••••••••• 13,14.

**• Main Component Replacement Procedures**

1. Replacement for the traverse deck ass'y. •••••••••••••••••••••••••••••••••••••••••••••• 14~16.

# ■ CD Changer Disassembly / Reassembly

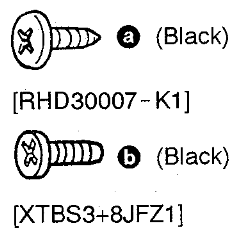
**Removal for the CD changer unit**

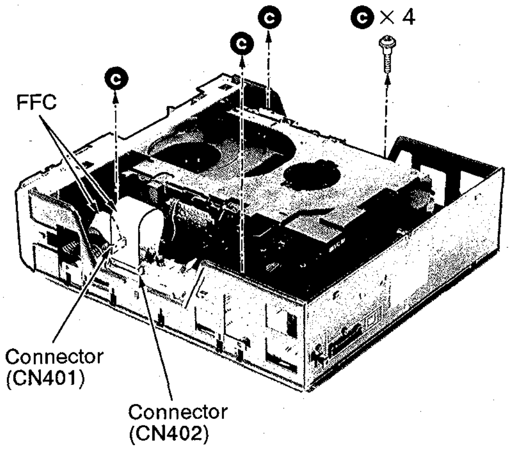


**Step 1** Remove the 5 screws.

**Step 2** Remove the cabinet.

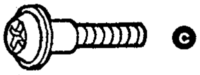
**Step 3** Release the 6 claws, and then remove the front panel ass'y.



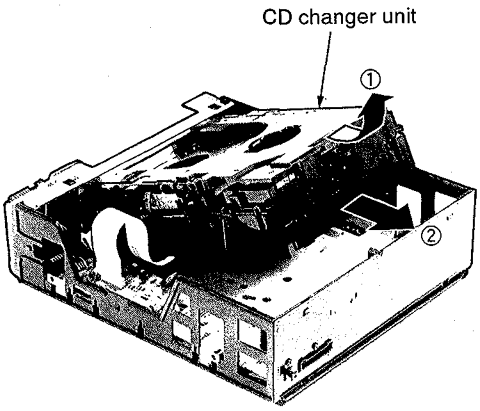

C
C
C
C × 4
FFC
Connector (CN401)
Connector (CN402)

**Step 4** Pull out the FFC (2 points).

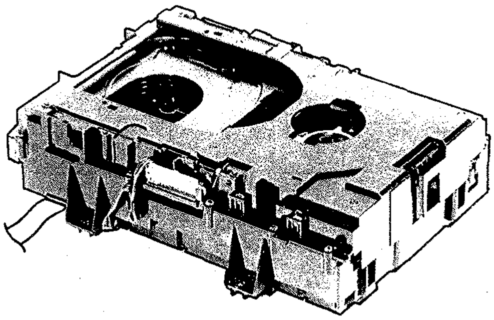
**Step 5** Remove the 4 screws.



[RHD30065]


CD changer unit
①
②

**Step 6** With lifting the rear side of CD changer unit, pull it backward.

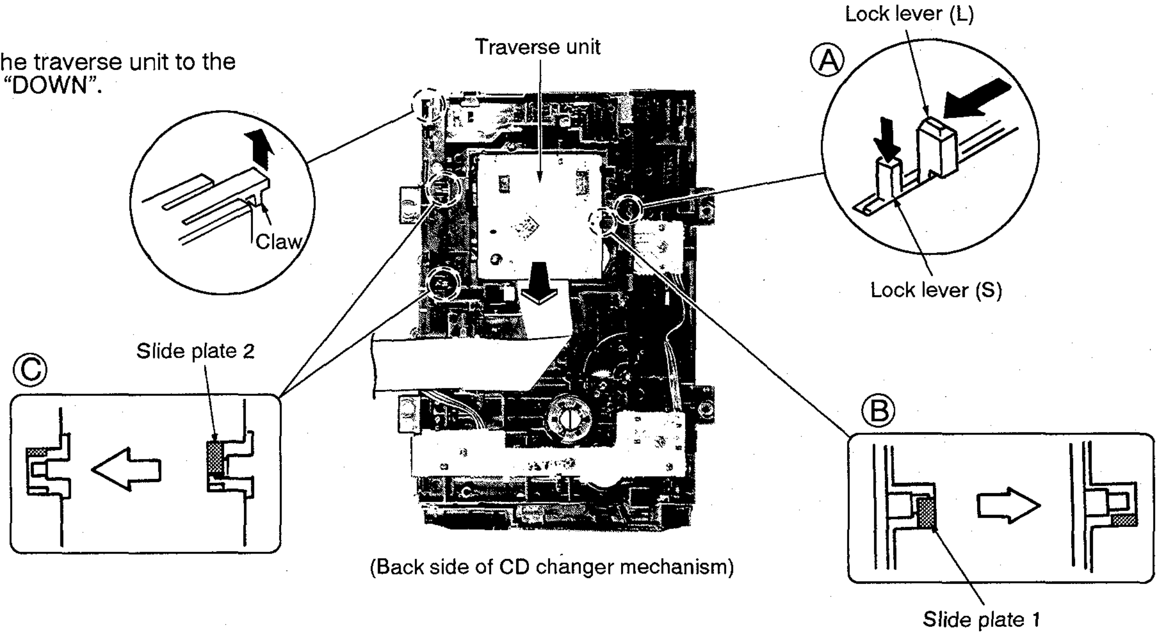


The CD changer unit will be removed.

## Removal for the traverse unit

**NOTE**

Locate the traverse unit to the position "DOWN".


Traverse unit
Claw
Ⓐ
Lock lever (L)
Lock lever (S)
Ⓒ
Slide plate 2
Ⓑ
Slide plate 1

(Back side of CD changer mechanism)

### Procedures

**Step 1** Push the lock lever (S) with lifting the claw, and then push the lock lever (L) in the direction of arrow (➡).

⇩ Refer to the figure Ⓐ .

**Step 2** The slide plate 1 and 2 of traverse retain boss Ⓑ and Ⓒ are open.

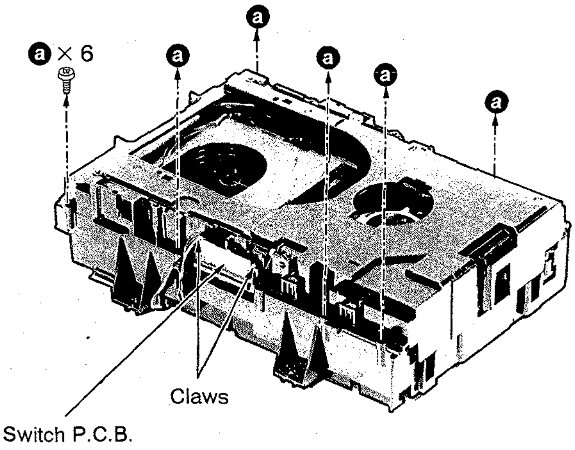
⇩ Refer to the figures Ⓑ and Ⓒ .

**Step 3** Push the traverse unit in the direction of arrow (➡).

(The FFC is connected.) ⇩

**Step 4** The traverse unit will be removed.

## Disassembly for the CD changer unit


ⓐ × 6
ⓐ
ⓐ
ⓐ
ⓐ
ⓐ
ⓐ
Claws
Switch P.C.B.

**NOTE**

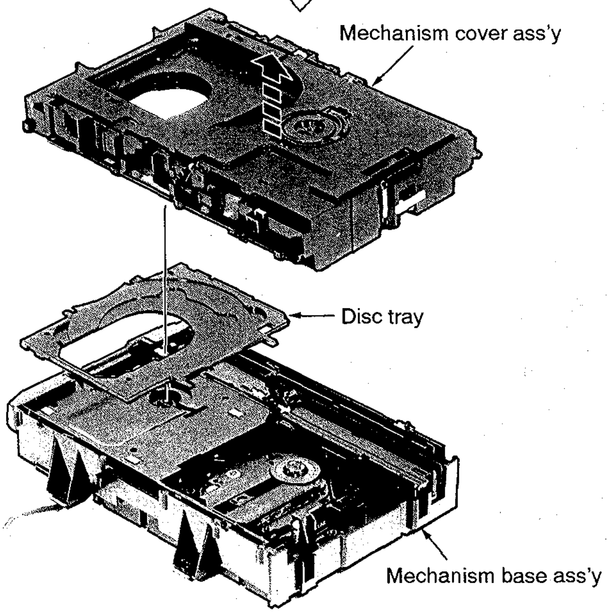
Locate the traverse unit to the position "DOWN".

**Step 1** Remove the switch P.C.B..

↓

**Step 2** Remove the 6 screws.

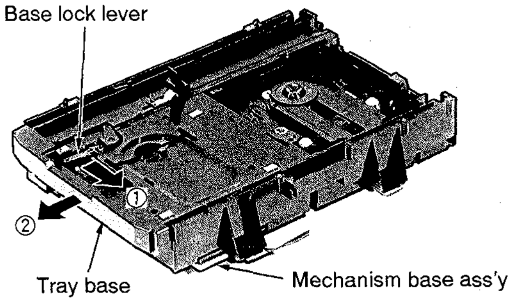
[XTB3+10J]


Mechanism cover ass'y
Disc tray
Mechanism base ass'y

**Step 3** Remove the mechanism cover ass'y.

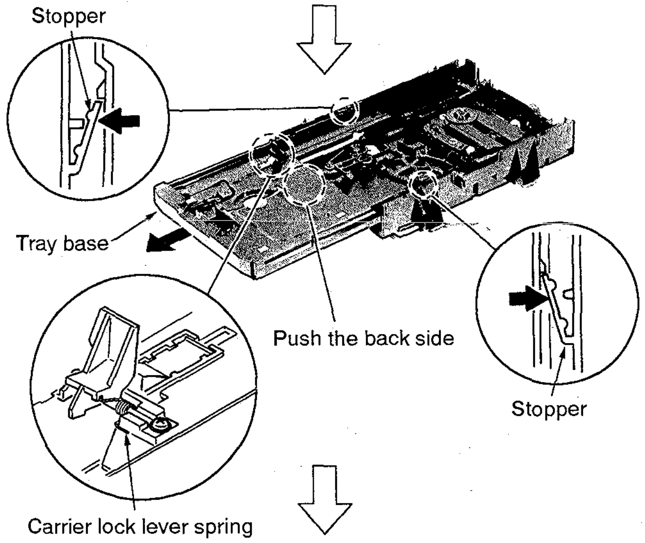
(!) 4 disc trays contacted to the mechanism cover ass'y will be removed.
1 disc tray is removed to the mechanism base ass'y.

**Step 4** Remove the disc tray sided mechanism base ass'y.


Base lock lever
①
②
Tray base
Mechanism base ass'y

**Step 5** Unlock the base lock lever.

**Step 6** Draw the tray base until it will be stopped.

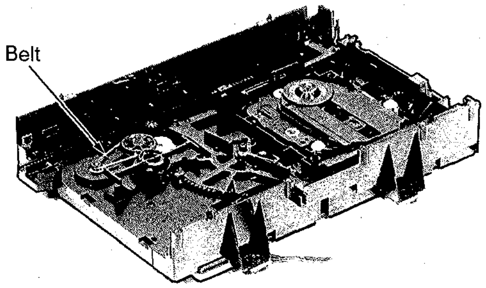

Stopper
Tray base
Push the back side
Stopper
Carrier lock lever spring

**Step 7** Release the stopper manually.

**Step 8** Draw the tray base.

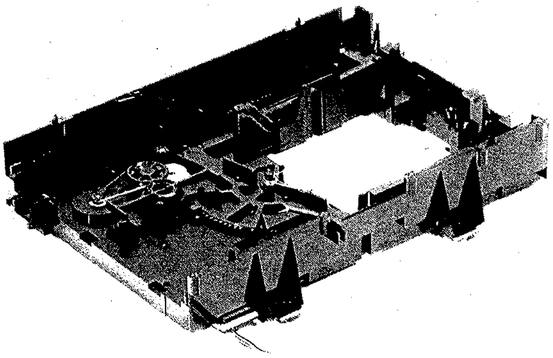
(!) In case that the tray base can not be open due to hooking, draw the tray base with finger pressing the back side indicated by ◌ of base. (Take care handling of stopper.)

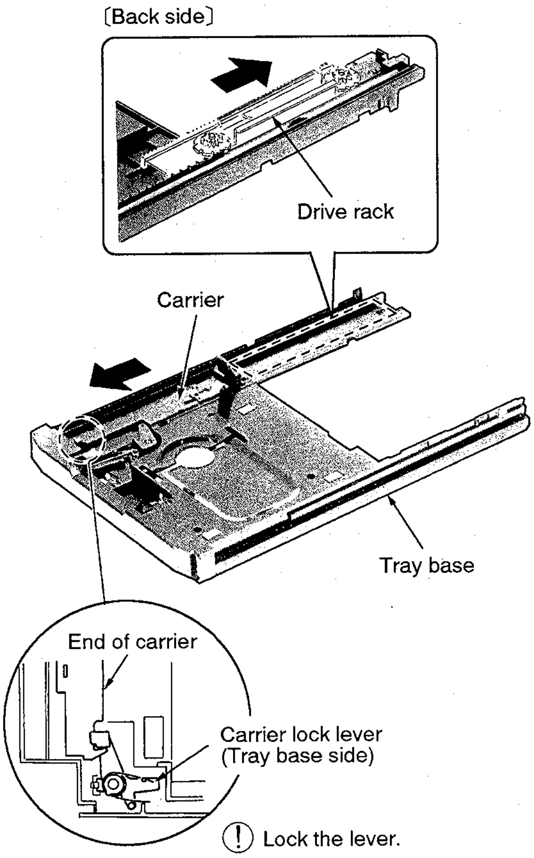
(!) Take care not avoid the carrier lock lever spring.



The belt and each part can be replaced after above procedures are performed.

## Reassembly for the CD changer unit

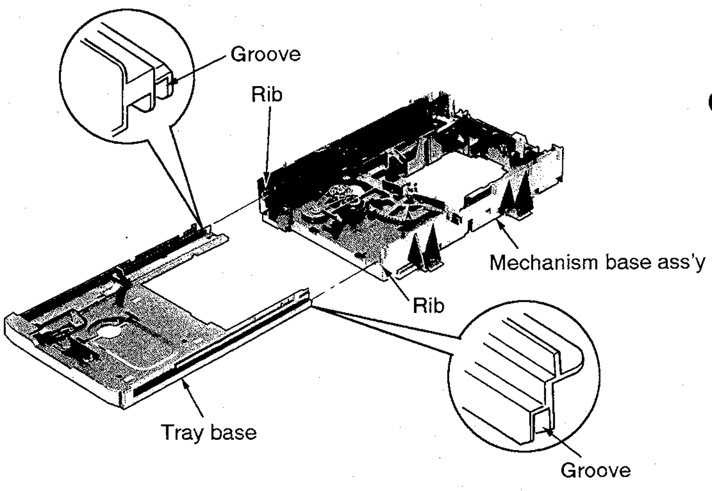



〔Back side〕
Drive rack
Carrier
Tray base
End of carrier
Carrier lock lever
(Tray base side)

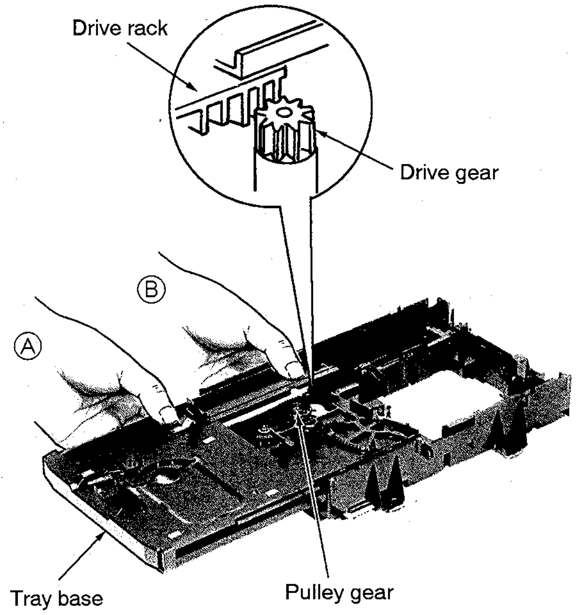
(!) Lock the lever.

**Step 1** Pull the drive rack in the direction of arrow (➡) fully.

**Step 2** Slide the carrier in the direction of arrow (➡).


Groove
Rib
Mechanism base ass'y
Rib
Tray base
Groove

**Step 3** Insert the tray base to the mechanism base ass'y with keeping the procedures **Step 1** and **Step 2** .

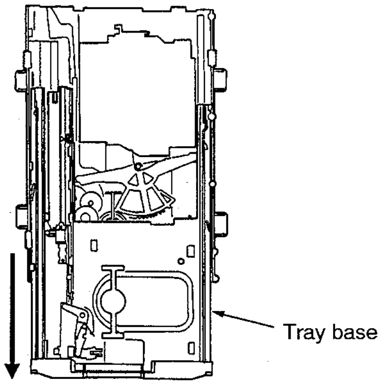

Drive rack
Drive gear
Ⓑ
Ⓐ
Tray base
Pulley gear

**Step 4** ◉ Insert the drive rack until the driver rack interferes with the drive gear.

Position Ⓐ

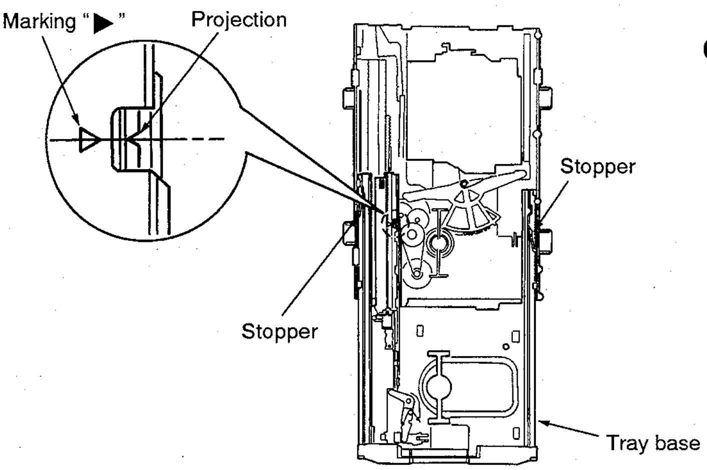
**Step 5** ◉ Rotate the pulley gear clockwise gently by hand (5 or 6 times).

ⓘ When the gear begins to rotate, rotate the pulley gear with finger pressure (position Ⓑ) because the drive rack gear will fall free.



**Step 6** Allow the tray base be open manually.

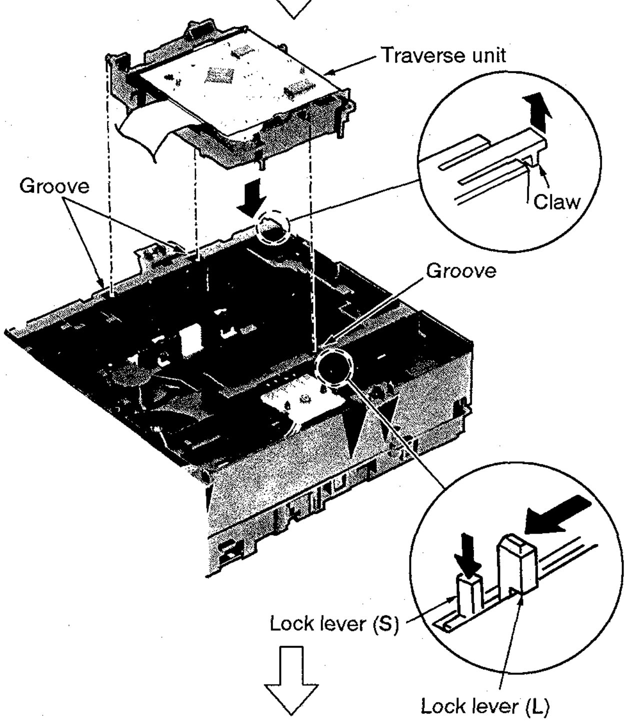
※ Draw the inserted tray base forward.


Marking "▶"
Projection
Stopper
Stopper
Tray base

**Step 7** Locate the projection at the marking "▶" as shown left.

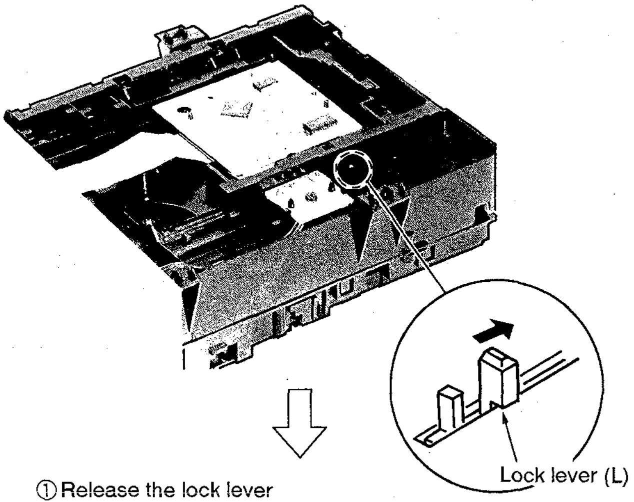
ⓘ In case that the stated above is not operated draw the tray base again. (Refer to item ⓘ on page L–5)

(Retry the item marked with ◉)

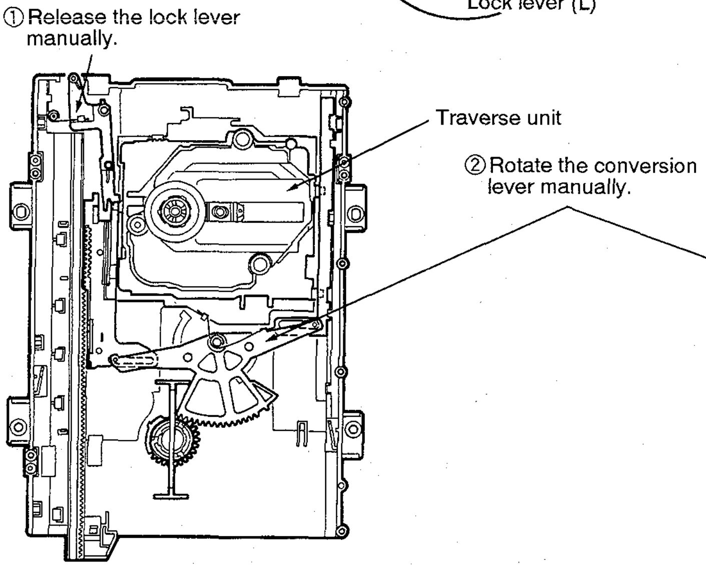

Traverse unit
Groove
Claw
Groove
Lock lever (S)
Lock lever (L)

**Step 8** While lifting the claw upward, press the lock lever (L) with forcing the lock lever (S).

**Step 9** Align the boss of traverse unit with the groove of mechanism base ass'y.

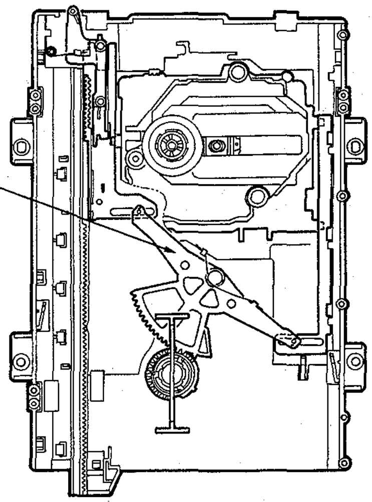

Lock lever (L)

**Step 10** Pull the lock lever (L) in the direction of arrow (➡).

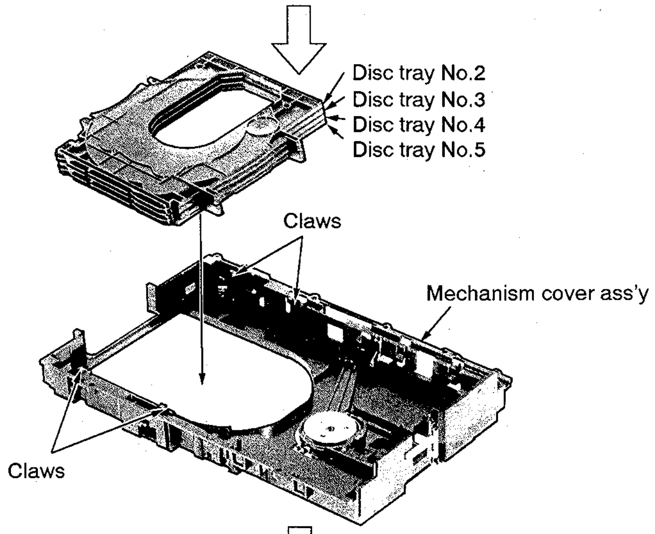

① Release the lock lever manually.
Traverse unit
② Rotate the conversion lever manually.

〈"DOWN"stated〉

After assembly, confirm the traverse unit operation.

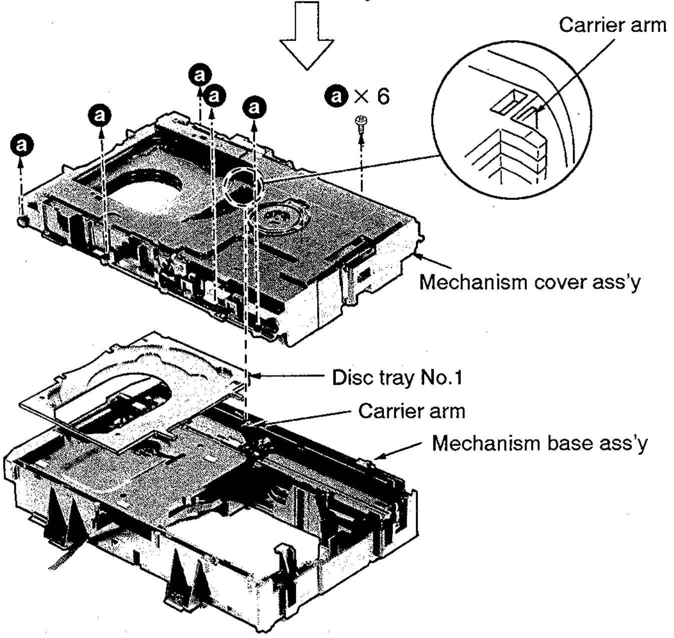


〈"UP"stated〉


Disc tray No.2
Disc tray No.3
Disc tray No.4
Disc tray No.5
Claws
Mechanism cover ass'y
Claws

**Step 11** Install the 4 disc trays to the mechanism cover ass'y. (Allow them to lock with claws.)

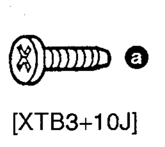
ⓘ Install the disc trays in specific order. (Disc tray No. is indicated on the tray.)


Carrier arm
a
a
a
a
a
a × 6
Mechanism cover ass'y
Disc tray No.1
Carrier arm
Mechanism base ass'y

**Step 12** Place the disc tray No.1 on the mechanism base ass'y.

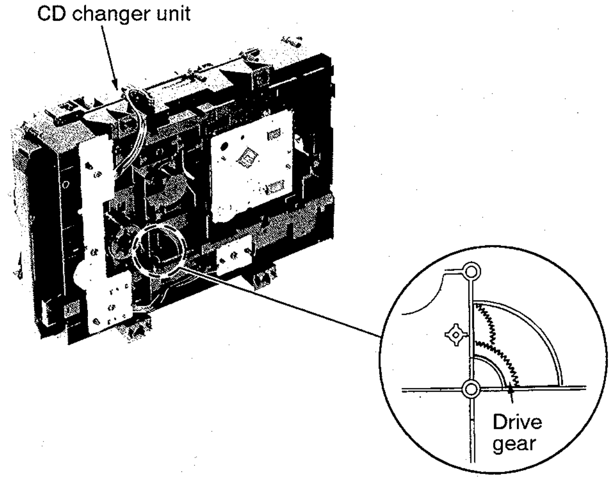
**Step 13** Install the mechanism cover ass'y.

ⓘ The carrier arm is positioned as shown left.



## Inspection for CD changer unit

- Begin the inspections in condition that the traverse is kept from disc tray. (5 disc trays in the store compartment.)


CD changer unit
Drive gear

※ Manual operations

① Rotate the drive gear counterclockwise manually.

↓

The traverse runs over the disc tray, and rises at maximum level.

↓

② Rotate the drive gear clockwise manually.

↓

The disc tray moves and is stored in upper compartment.

↓

The tray base is open.

↓

③ Again rotate the drive gear counterclockwise manually.

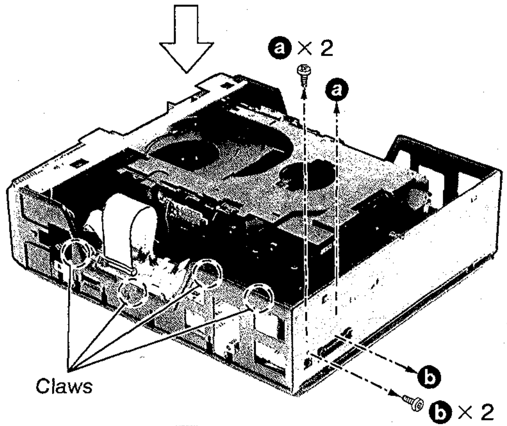
↓

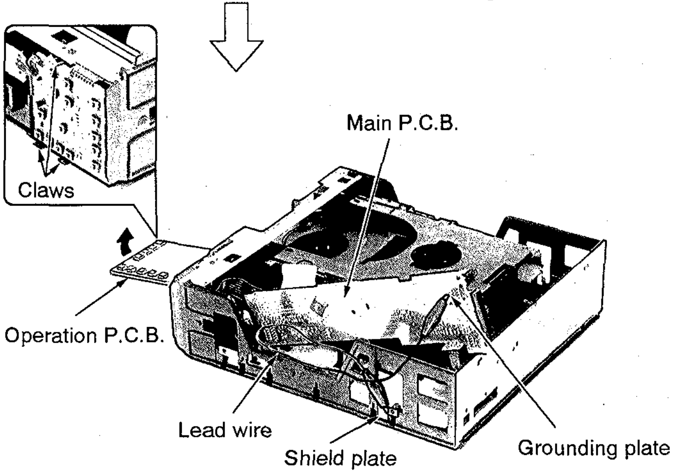
The tray base is closed, and then it returns to start position.

# Main Component Replacement Procedures

## Checking for the main P.C.B. and the operation P.C.B.

Perform the items **Step 1** and **Step 2** for CD changer removal
(Refer to page 5.)


a × 2
a
Claws
b
b × 2


Claws
Main P.C.B.
Operation P.C.B.
Lead wire
Shield plate
Grounding plate

**Main P.C.B.**

**Step 1** Remove the 4 screws.

**Step 2** Release the 4 claws, and then stand the main P.C.B..

**Step 3** Connect the lead wire between the grounding plate and shield plate.

**Operatiom P.C.B.**

**Step 1** Release the 3 claws, and then upset the operation P.C.B..

Check the main P.C.B. (solder side) and the operation P.C.B. (solder side) as shown left.

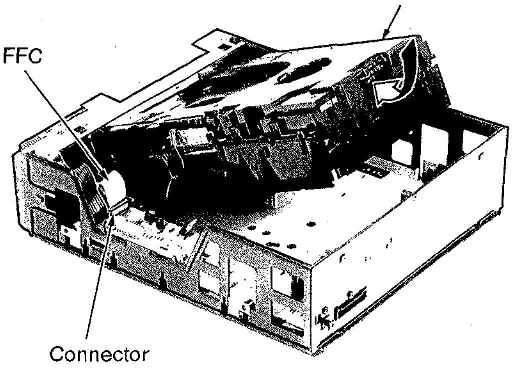
a (Black)
[XTB3+8JFZ]

b (Black)
[XTBS3+8JFZ1]

## Checking for the servo P.C.B.

Perform the items **Step 1** ~ **Step 6** for CD changer removal
(Refer to pages 5 and 6.)

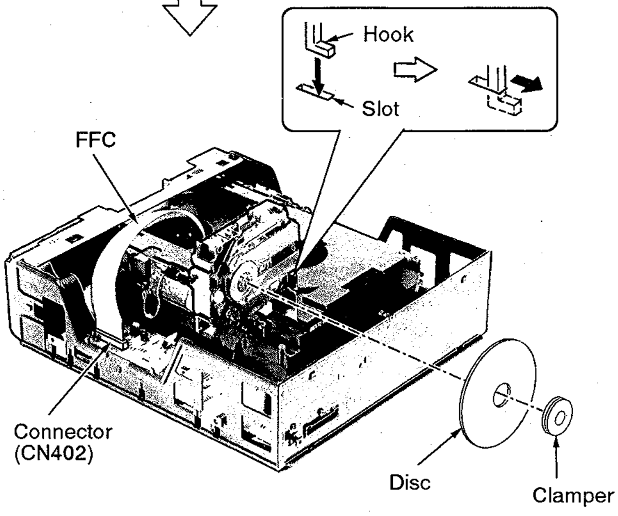
Perform the items **Step 1** ~ **Step 4** for traverse unit removal
(Refer to page 6.)

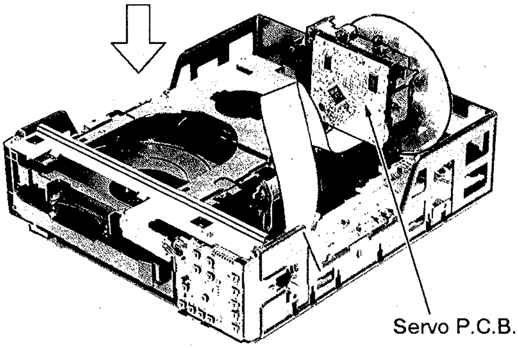

CD changer unit
FFC
Connector

**Step 1** Install the CD changer unit to the set.

(!) Screw tighten is not necessary.

**Step 2** Connect the FFC to the connector (CN401).


Hook
Slot
FFC
Connector
(CN402)
Disc
Clamper



**Step 3** Align the hook of traverse unit with the slot, and then stand it.

**Step 4** Attach the disc and clamper with magnet to the traverse unit.

(!) Prepare the clamper used ordinaly.

**Step 5** Connect the FFC to the connector (CN402).

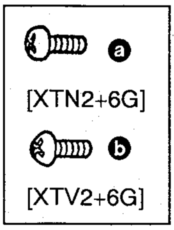
Check the servo P.C.B. (solder side) as shown left.

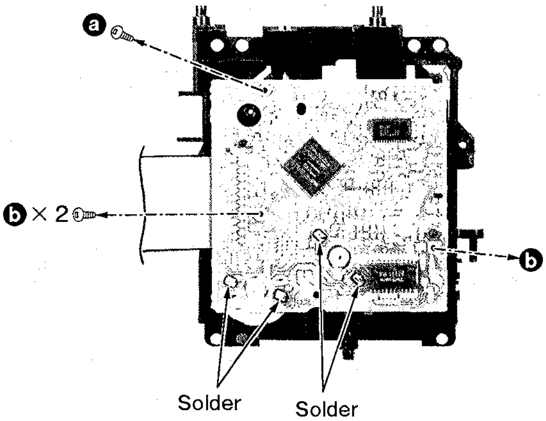
## Main Component Replacement Procedures

### Replacement for the traverse deck ass'y

Perform the items **Step 1** ~ **Step 6** for CD changer removal (Refer to pages 5 and 6.)

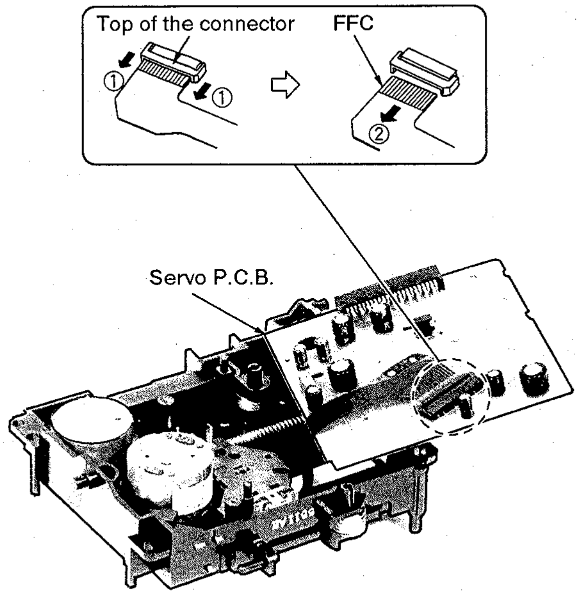
Perform the items **Step 1** ~ **Step 4** for traverse unit removal (Refer to page 7.)


ⓐ
[XTN2+6G]
ⓑ
[XTV2+6G]


ⓐ
ⓑ × 2
ⓑ
Solder
Solder

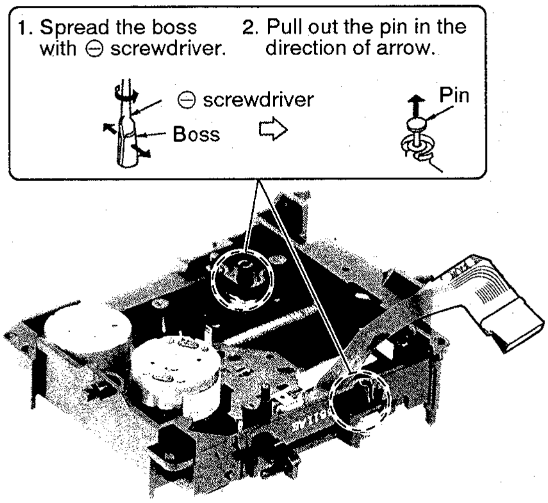
**Step 1** Remove the 3 screws.

**Step 2** Unsolder the motor terminals.

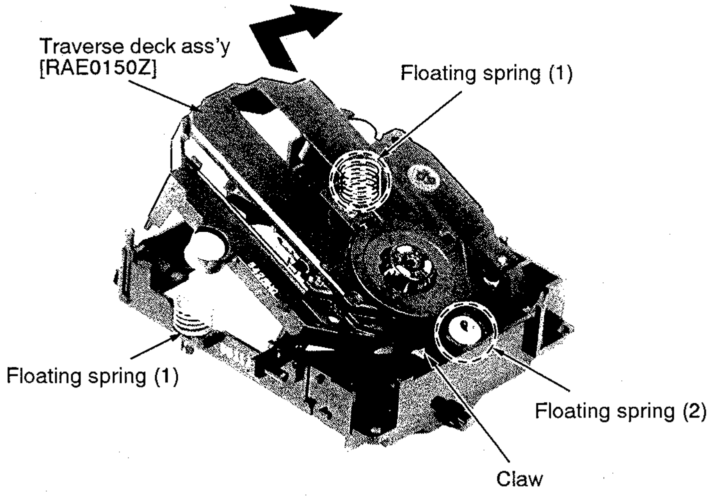

Top of the connector
FFC
①
①
②
Servo P.C.B.

**Step 3** Remove the FFC from the connector, and then remove the servo P.C.B..

(!) Solder the point between pin 4 (LD) and pin 5 (GND) of FFC.
(Refer to "Handling Precautions for Traverse Deck" on page 4).


1. Spread the boss with ⊖ screwdriver.
2. Pull out the pin in the direction of arrow.
⊖ screwdriver
Boss
Pin

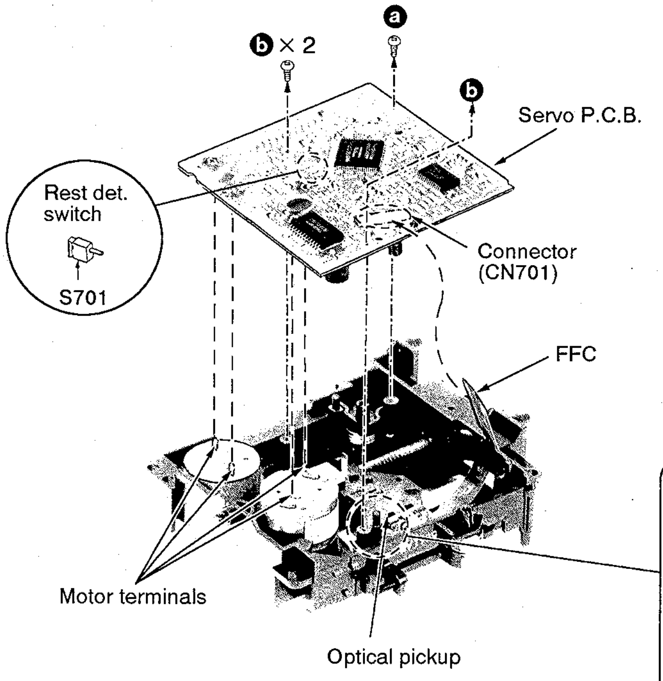
**Step 4** Remove the pins.


Traverse deck ass'y [RAE0150Z]
Floating spring (1)
Floating spring (1)
Floating spring (2)
Claw

**Step 5** Release the claws, and then remove the traverse deck ass'y.

(!) Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck ass'y.

## Installation of the servo P.C.B.


ⓑ × 2
ⓐ
ⓑ
Servo P.C.B.
Rest det. switch
S701
Connector (CN701)
FFC
Motor terminals
Optical pickup

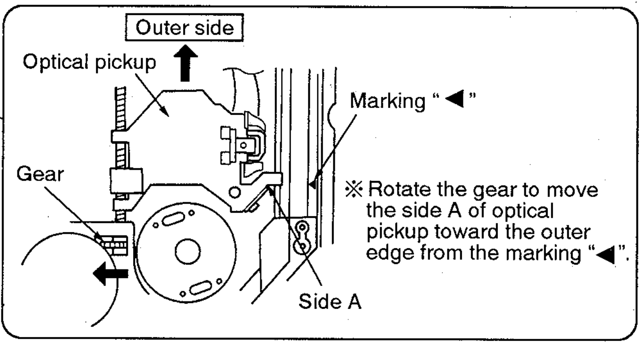
**Step 1** Before installing the servo P.C.B., move the optical pickup toward the outer edge from mark "▼".

(!) In case that the optical pickup is not moved toward the outer edge from the marking, the rest detect switch (S701) mounted on the servo P.C.B. may be damaged.

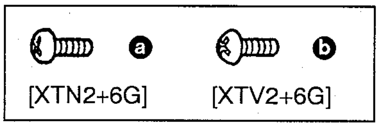
**Step 2** Connect the FFC to the connector.

**Step 3** Install the servo P.C.B., and then tighten screws.

(!) After tightening screws, solder each motor terminal.


Outer side
Optical pickup
Marking "◀"
Gear
Side A

※ Rotate the gear to move the side A of optical pickup toward the outer edge from the marking "◀".


ⓐ
[XTN2+6G]
ⓑ
[XTV2+6G]

# ERROR CODE DISPLAY AND SERVO ADJUSTMENT FUNCTION

This unit has an error code display function, so that if the unit operates incorrectly, the fault is displayed using an error code on the FL display of the tuner (ST-CA10). It also has a servo adjustment function for displaying the status of servo system functions (focus, tracking, CLV) on the tuner's FL display.
The system control IC and FL display are part of the tuner so make sure the system has been connected properly before using these functions.
(This unit can be operated independently, although the error code display and servo adjustment functions cannot be used.)
Use these two functions for guidance during fault diagnosis and repair.

**Note: Check beforehand for scratching or soiling of the test disc (SZZP1054C), and soiling or other problems with the optical pickup lens.**

## ● Error code display procedure

**Automatic adjustment results**

Turn power ON.

Load the test disc (SZZP1054C).

Hold down the REPEAT button for at least 2 seconds, and then press the STOP button for at least 2 seconds while continuing to hold down the REPEAT button.

A servo section error code is displayed. (See **Table 2.**)
Use this error code display as a guideline for finding the malfunction point in the servo circuitry. If the error code **"E-00"** is displayed, the unit is "OK (No problem)."

**Checking the mechanism switches**

Press the F. SKIP button.

A mechanism OK/NG error code is displayed. (See **Table 1.**)
This error code can be used to diagnose whether or not the mechanism is OK. If there are multiple errors, these can be displayed successively by pressing the F. SKIP button.

Remove the disc and turn the power OFF. (The error code display mode is canceled.)

## ● Servo adjustment procedure

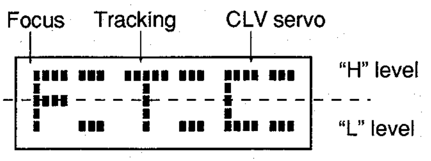
Turn the power ON.

Load the test disc (SZZP1054C)

Hold down the REPEAT button for at least 2 seconds, then press the PAUSE button for at least 2 seconds while holding down the REPEAT button.

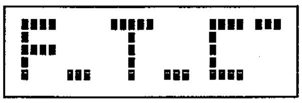
Press the ▷ (PLAY) button, and play for 10 seconds

Servo adjustment results are displayed



Remove the disc and turn the power OFF.

(Example)



= Normal

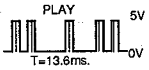
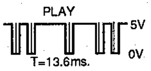
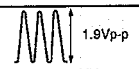
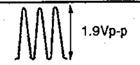
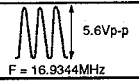
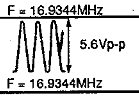
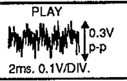
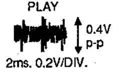
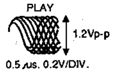
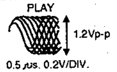
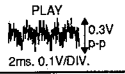
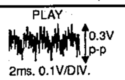
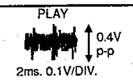
| | "L" level | "H" level |
|---|---|---|
| Focus | Focus system normal | Focus system defective |
| Tracking | Tracking system normal | Tracking system defective |
| CLV servo | CLV servo system defective | CLV servo system normal |

## ● Table 1

| FL display | Symptom | Cause |
|---|---|---|
| H - 15 | When CD tray opens, it closes by itself. | Disc tray "Open" detection switch (S4) fault. |
| H - 16 | When CD tray closes, it opens by itself | Disc tray "Closed" detection switch (S4) fault. |
| F - 15 | Does not play, even when CD play button is pressed. | Pickup rest position detection switch (S701) fault. |
| F - 16 | Traverse pushes up disc tray. | Up position detection switch (S3) fault. |
| F - 26 | Does not move even when "▷ " (PLAY) is pressed. | System control or servo processor IC (IC401, 702) fault. |
| F - 27 | Tray keeps moving for a while, or selected tray does not open. | Disc number detection switch (S5) fault. |
| F - 28 | | Stocker position detection, or play position detection switch (S1, S2) fault. |
| F - 75 | "NO DISC" is displayed and unit does not play, even when a CD is loaded. | CD circuit power supply problem. |

## ● Table 2

※ The unit is satisfactory if the error code is **E - 00** of **E - 02**
※ Before testing, check that the test disc is free of scratches and optical pickup is clean.

| FL error code display | Symptom | Probable cause | Signal to check | | Normal voltage and waveform values | |
|---|---|---|---|---|---|---|
| | | | Signal name | Location | PLAY | STOP |
| E - 01 | Focus and tracking offset adjustments not completed in the specified time period. | 1. Clocks X1 and X2, power supply VDD and reset/RST, all on IC702.<br>2. MDATA, MCLK, MLD and SENSE signal to/from mechanism controller. | MDATA | IC702 ⑧ pin |  | 0V |
| | | | MCLK | IC702 ⑦ pin |  | 4.8V |
| | | | MLD | IC702 ⑨ pin | | |
| | | | SENSE | IC702 ⑩ pin | 0V | 0V |
| | | | /RST | IC702 ⑱ pin | 4.9V | 4.9V |
| | | | X1 | IC702 (58) pin |  |  |
| | | | X2 | IC702 (59) pin |  |  |
| E - 03<br>E - 05<br>E - 07<br>E - 09<br>E - 0B<br>E - 0D<br>E - 0F | Disc play unstable. | 1. Scratches or contaminants on disc surface.<br>2. Focus and tracking servo circuits (check waveforms, voltages, and part values.)<br>3. Spindle driver circuit.<br>4. Optical pickup. | FE | IC702 ㉜ pin |  | 2.5V |
| | | | TE | IC702 ㉝ pin |  | 2.5V |
| | | | FOD | IC702 ㉘ pin | 2.5V | 2.5V |
| | | | TRD | IC702 ㉗ pin | 2.5V | 2.5V |
| | | | KICK | IC702 ㉖ pin | 2.5V | 2.5V |
| | | | /FLOCK | IC702 ⑪ pin | 0V | 4.9V |
| | | | /RF DET | IC702 ㊳ pin | 0V | 4.9V |
| | | | RF | TJ701 |  | 3.4V |
| | | | STAT | IC702 ⑰ pin | 4.9V | 0V |
| E - 04<br>E - 06<br>E - 0C<br>E - 0E | Best "Eye" (PD Balance) adjustment not completed in the specified time period. | 1. Scratches or contaminants on disc surface.<br>2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.)<br>3. Optical pickup. | FBAL | IC702 ㉚ pin | 2.5 ±1.25V | 2.5 ±1.25V |
| | | | RF | TJ701 |  | 3.4V |
| | | | FE | IC702 ㉜ pin |  | 2.5V |
| | | | /TLOCK | IC702 ⑫ pin | 0V | 0V |
| | | | OFT | IC702 ㊱ pin | 0V | 0V |
| E - 08<br>E - 0A | Focus or Tracking gain adjustment not completed in the specified time period. | 1. Scratches or contaminants on disc surface.<br>2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.)<br>3. Optical pickup. | FE | IC702 ㉜ pin |  | 2.5V |
| | | | TE | IC702 ㉝ pin |  | 2.5V |
| | | | /TLOCK | IC702 ⑫ pin | 0V | 0V |
| | | | OFT | IC702 ㊱ pin | 0V | 0V |

# ■MEASUREMENTS AND ADJUSTMENTS

**Cautions:**
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

This unit SL-CA10 is designed to operate on power supplied from the Amplifier SE-CA10 through the Tuner ST-CA10.
When connecting the unit to other system components, do not connect to the Amplifier SE-CA10 directly. Be sure to connect this unit through the Tuner ST-CA10.
When operating the unit SL-CA10 alone for testing and servicing, without having power supplied from the Amplifier SE-CA10 and the Tuner ST-CA10, use the following method.

## Power Supply to This Unit alone

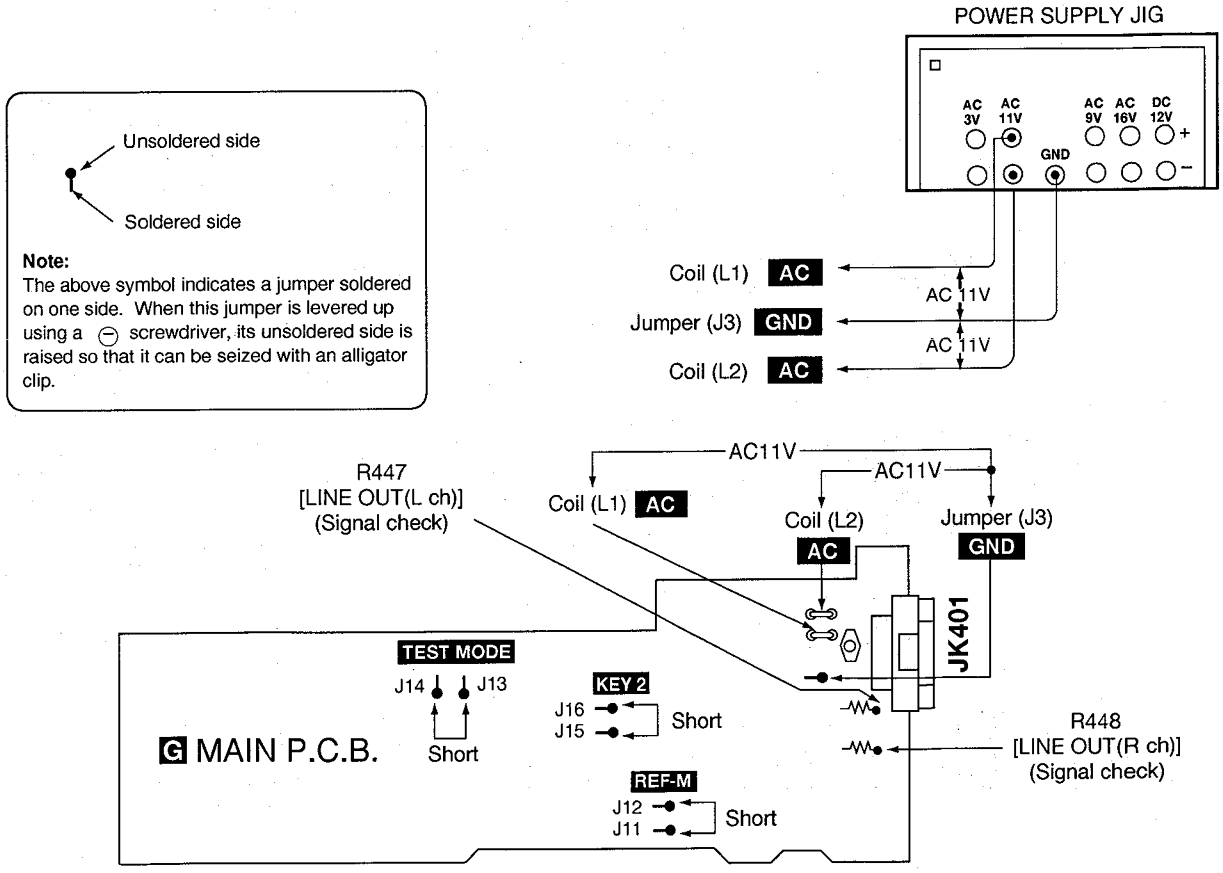
1. Short-circuit the section between jumper (J13) and jumper (J14) [**TEST MODE**].
2. Apply 11V AC power to the section between **AC** of the coil (L1) and the jumper (J3) **GND** as well as the section between **AC** of the coil (L2) and the jumper (J3) **GND**. **(Shown in Fig. 1)**

## Operating the Unit Alone

When this unit is operated alone without system connection to other units, the switches on the front panel remain inoperative. To operate the switches, follow the procedure below.
1. Short-circuit the points between the jumper (J11), the jumper (J12) and the [**REF-M**].
2. Short-circuit the points between the jumper (J15), the jumper (J16) and the [**KEY2**].

## To Check Signals

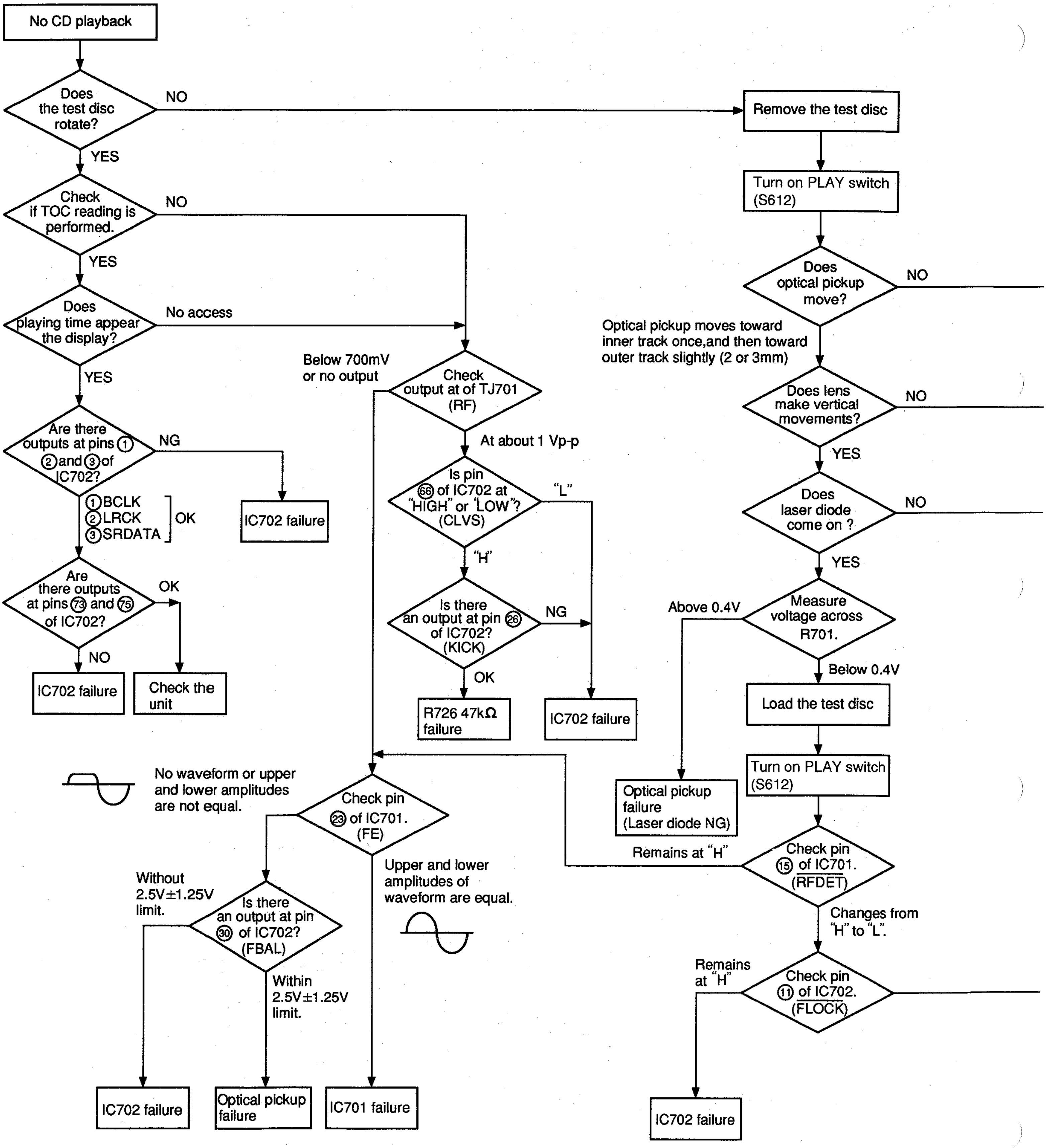
Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R447 and the GND point of the jumper (J3) as well as the section between LINE OUT (R ch) of the resistor R448 and the GND point of the jumper (J3) and check if the signals are outputting from this unit. **(Shown in Fig. 1)**

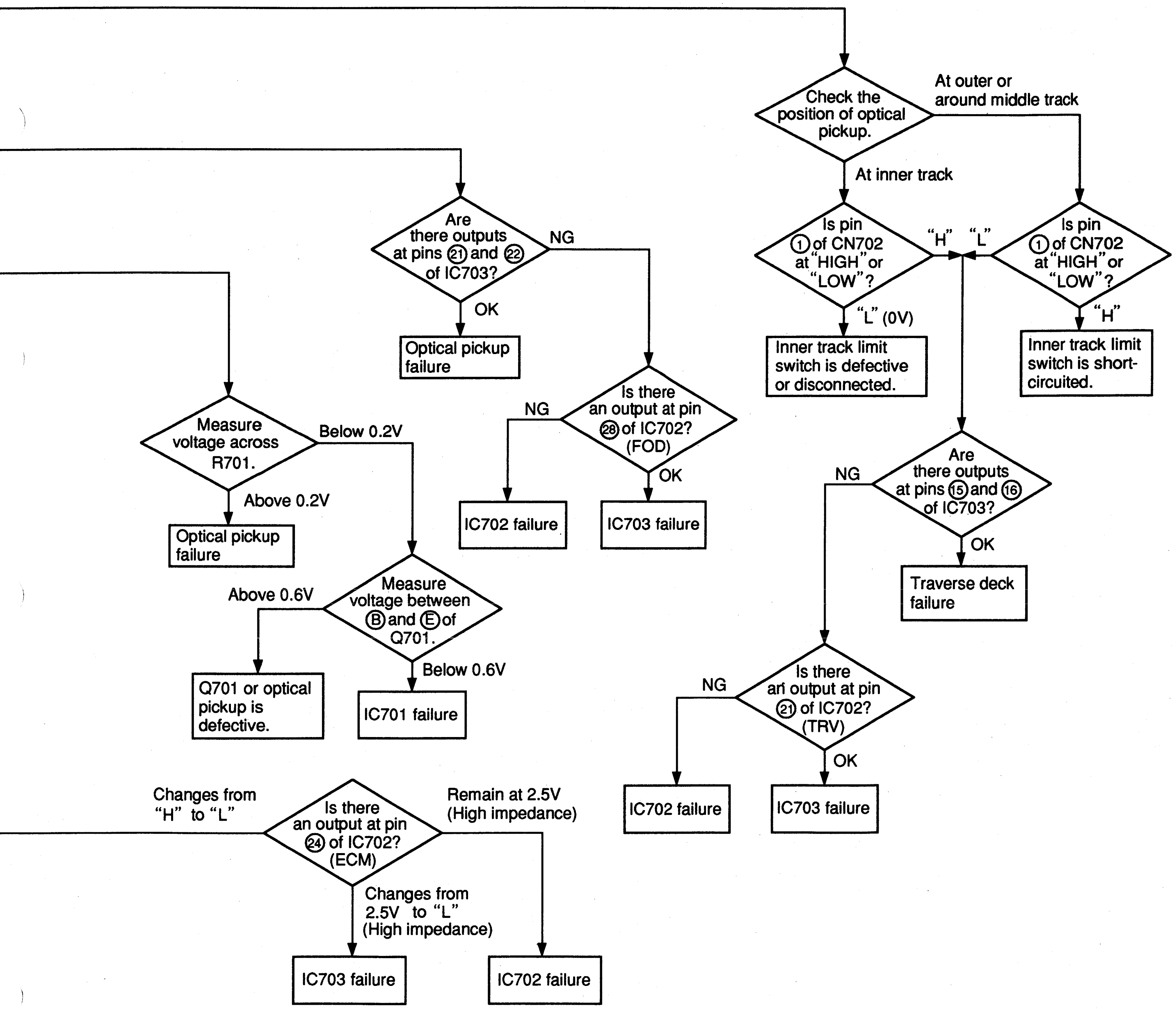

POWER SUPPLY JIG
AC 3V
AC 11V
AC 9V
AC 16V
DC 12V
+
GND
−
Unsoldered side
Soldered side
Coil (L1) AC
Jumper (J3) GND
Coil (L2) AC
AC 11V
AC 11V
AC11V
AC11V
R447
[LINE OUT(L ch)]
(Signal check)
Coil (L1) AC
Coil (L2) AC
Jumper (J3) GND
JK401
TEST MODE
J14
J13
Short
KEY 2
J16
J15
Short
G MAIN P.C.B.
REF-M
J12
J11
Short
R448
[LINE OUT(R ch)]
(Signal check)

**Note:**
The above symbol indicates a jumper soldered on one side. When this jumper is levered up using a ⊖ screwdriver, its unsoldered side is raised so that it can be seized with an alligator clip.

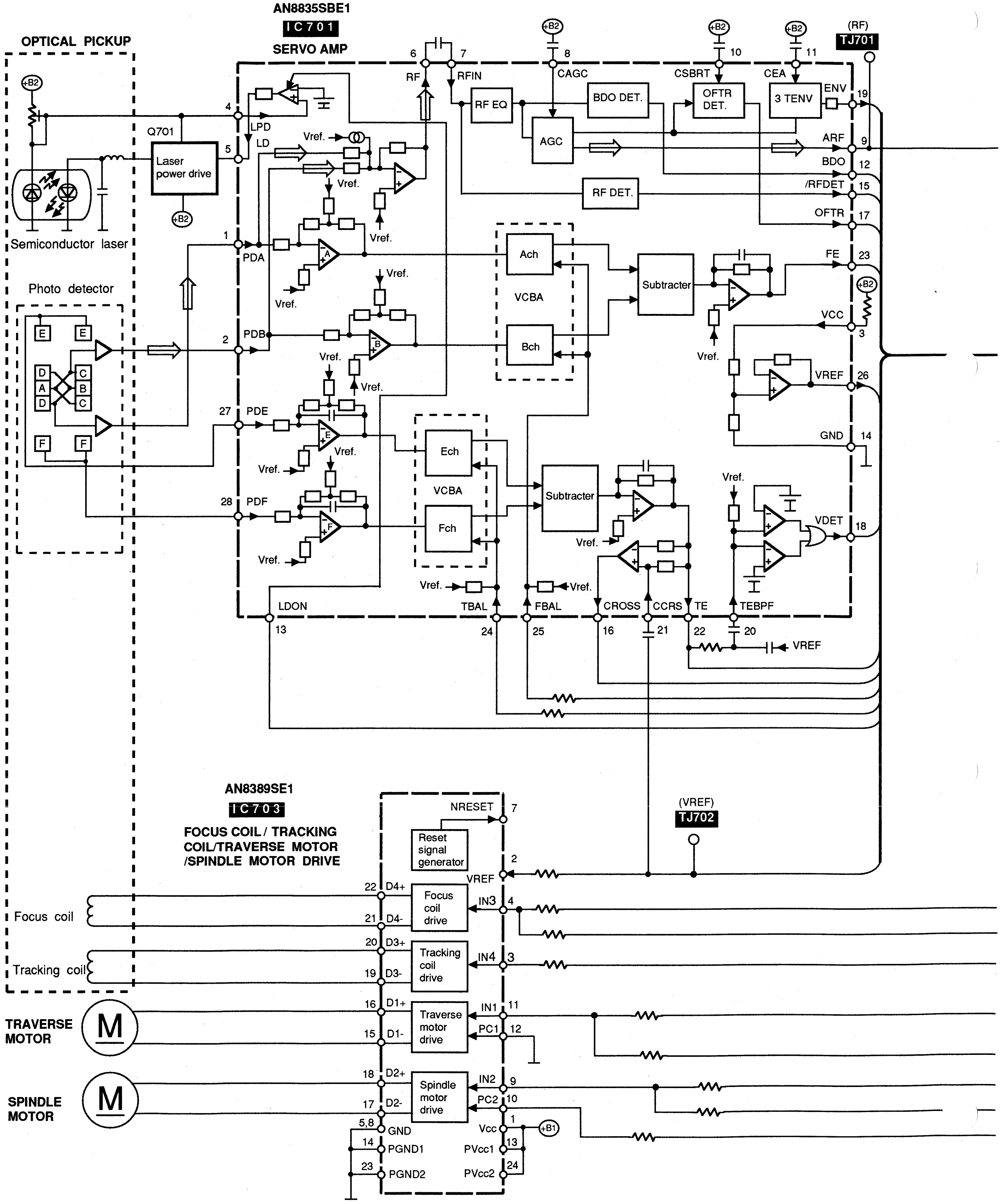
Fig. 1

# TROUBLE SHOOTING (SERVO CIRCUIT)


No CD playback
Does the test disc rotate?
NO
YES
Remove the test disc
Turn on PLAY switch (S612)
Check if TOC reading is performed.
NO
YES
Does optical pickup move?
NO
Does playing time appear the display?
No access
YES
Optical pickup moves toward inner track once,and then toward outer track slightly (2 or 3mm)
Below 700mV or no output
Check output at of TJ701 (RF)
Does lens make vertical movements?
NO
YES
Are there outputs at pins ① ②and③of IC702?
NG
At about 1 Vp-p
①BCLK
②LRCK
③SRDATA
OK
IC702 failure
Is pin ㊻ of IC702 at "HIGH" or "LOW"? (CLVS)
"L"
"H"
Does laser diode come on ?
NO
YES
Are there outputs at pins ㉓ and ㉕ of IC702?
OK
NO
IC702 failure
Check the unit
Is there an output at pin ㉖ of IC702? (KICK)
NG
OK
R726 47kΩ failure
IC702 failure
Above 0.4V
Measure voltage across R701.
Below 0.4V
Load the test disc
Turn on PLAY switch (S612)
Optical pickup failure (Laser diode NG)
No waveform or upper and lower amplitudes are not equal.
Check pin ㉓ of IC701. (FE)
Upper and lower amplitudes of waveform are equal.
Remains at "H"
Check pin ⑮ of IC701. (RFDET)
Changes from "H" to "L".
Without 2.5V±1.25V limit.
Is there an output at pin ㉚ of IC702? (FBAL)
Within 2.5V±1.25V limit.
Remains at "H"
Check pin ⑪ of IC702. (FLOCK)
IC702 failure
Optical pickup failure
IC701 failure
IC702 failure


Check the position of optical pickup.
At outer or around middle track
At inner track
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
"L"
Is pin ① of CN702 at "HIGH" or "LOW"?
"L" (0V)
Inner track limit switch is defective or disconnected.
"H"
Inner track limit switch is short-circuited.
Are there outputs at pins ㉑ and ㉒ of IC703?
NG
OK
Optical pickup failure
Is there an output at pin ㉘ of IC702? (FOD)
NG
OK
IC702 failure
IC703 failure
Measure voltage across R701.
Below 0.2V
Above 0.2V
Optical pickup failure
Measure voltage between Ⓑ and Ⓔ of Q701.
Above 0.6V
Below 0.6V
Q701 or optical pickup is defective.
IC701 failure
Are there outputs at pins ⑮ and ⑯ of IC703?
NG
OK
Traverse deck failure
Is there an output at pin ㉑ of IC702? (TRV)
NG
OK
IC702 failure
IC703 failure
Changes from "H" to "L"
Is there an output at pin ㉔ of IC702? (ECM)
Remain at 2.5V (High impedance)
Changes from 2.5V to "L" (High impedance)
IC703 failure
IC702 failure

# BLOCK DIAGRAM

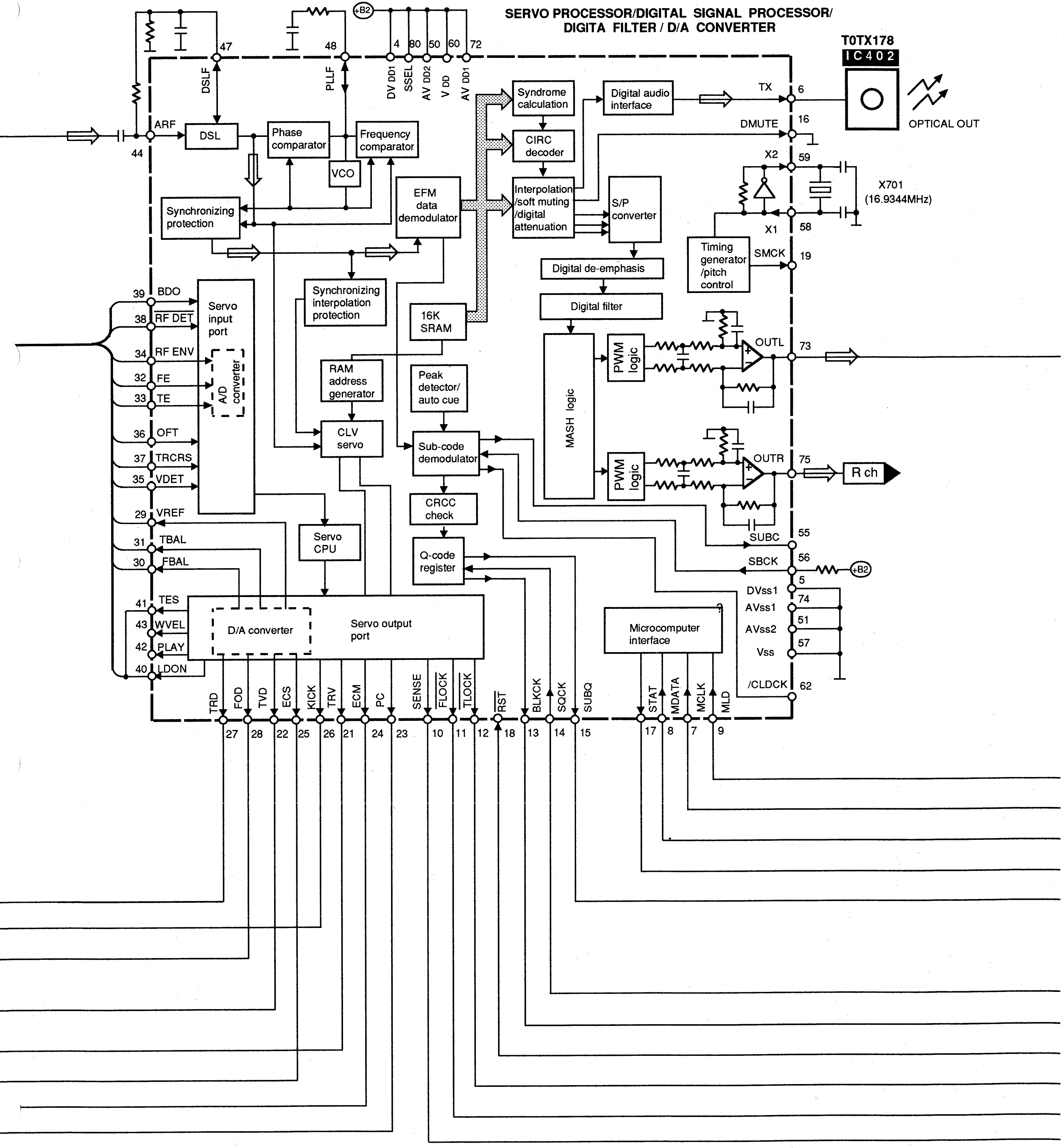

AN8835SBE1
IC701
SERVO AMP
OPTICAL PICKUP
Semiconductor laser
Photo detector
Q701
Laser power drive
+B2
LPD
LD
PDA
PDB
PDE
PDF
Vref.
RF
RFIN
CAGC
CSBRT
CEA
RF EQ
BDO DET.
OFTR DET.
3 TENV
AGC
RF DET.
ENV
ARF
BDO
/RFDET
OFTR
FE
VCC
VREF
GND
VDET
(RF)
TJ701
Ach
Bch
VCBA
Ech
Fch
Subtracter
LDON
TBAL
FBAL
CROSS
CCRS
TE
TEBPF
VREF
AN8389SE1
IC703
FOCUS COIL / TRACKING COIL/TRAVERSE MOTOR /SPINDLE MOTOR DRIVE
NRESET
Reset signal generator
VREF
(VREF)
TJ702
Focus coil
Tracking coil
TRAVERSE MOTOR
SPINDLE MOTOR
M
D4+
D4-
D3+
D3-
D1+
D1-
D2+
D2-
Focus coil drive
Tracking coil drive
Traverse motor drive
Spindle motor drive
IN3
IN4
IN1
PC1
IN2
PC2
GND
PGND1
PGND2
Vcc
PVcc1
PVcc2
+B1

- **Signal line** ⇨ : **CD signal**

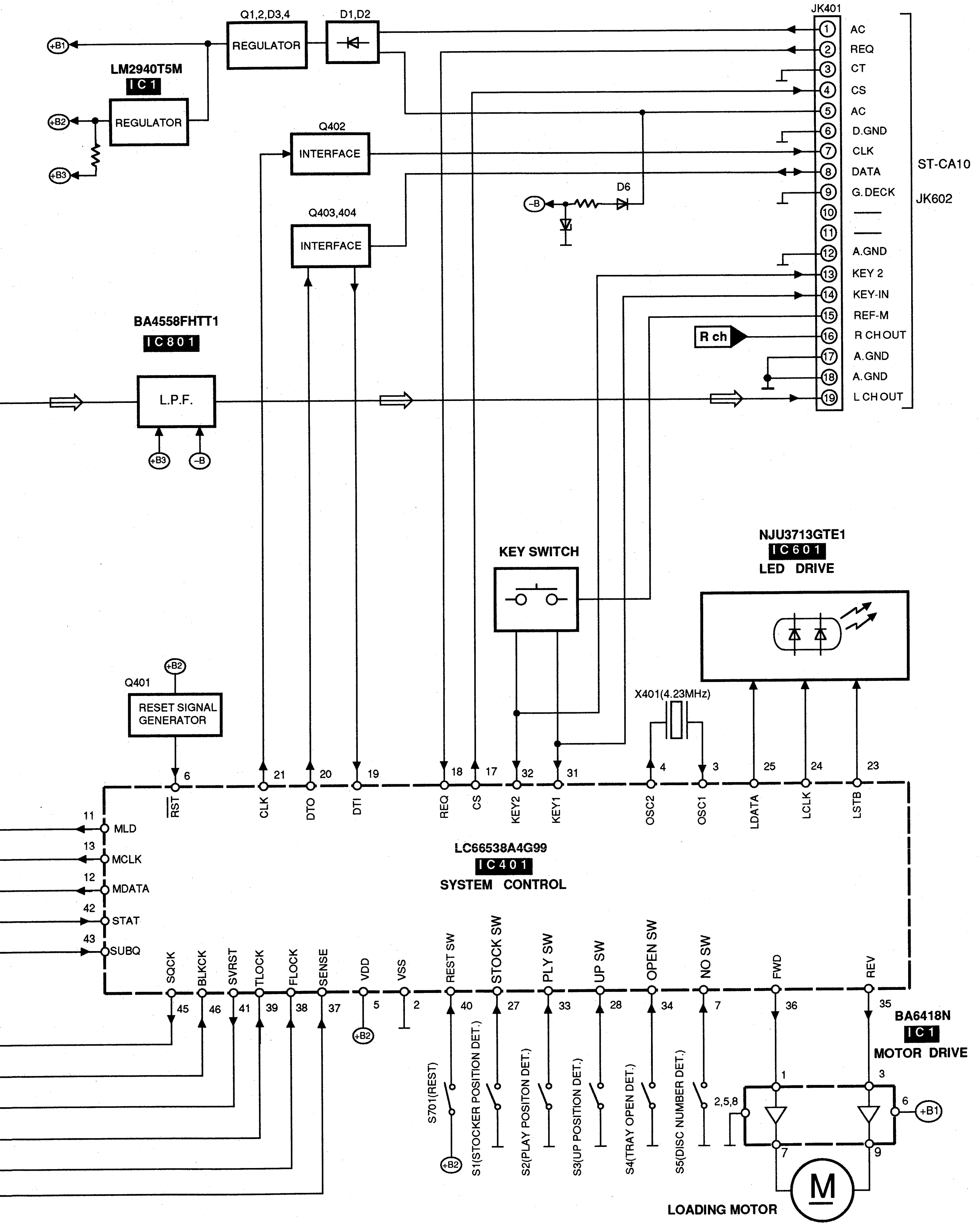
**MN662740RM1**

**IC702**

**SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/ DIGITA FILTER / D/A CONVERTER**


+B2
47
48
4
80
50
60
72
DSLF
PLLF
DV DD1
SSEL
AV DD2
V DD
AV DD1
T0TX178
IC402
OPTICAL OUT
ARF
44
DSL
Phase comparator
Frequency comparator
VCO
Synchronizing protection
EFM data demodulator
Syndrome calculation
CIRC decoder
Interpolation /soft muting /digital attenuation
Digital audio interface
S/P converter
TX
6
DMUTE
16
X2
59
X1
58
X701 (16.9344MHz)
Timing generator /pitch control
SMCK
19
Digital de-emphasis
Digital filter
Synchronizing interpolation protection
16K SRAM
RAM address generator
CLV servo
Peak detector/ auto cue
Sub-code demodulator
CRCC check
Q-code register
Servo CPU
MASH logic
PWM logic
PWM logic
OUTL
73
OUTR
75
R ch
39 BDO
38 RF DET
34 RF ENV
32 FE
33 TE
36 OFT
37 TRCRS
35 VDET
29 VREF
31 TBAL
30 FBAL
41 TES
43 WVEL
42 PLAY
40 LDON
Servo input port
A/D converter
D/A converter
Servo output port
SUBC
55
SBCK
56
+B2
5
DVss1
74
AVss1
51
AVss2
57
Vss
/CLDCK
62
Microcomputer interface
TRD
FOD
TVD
ECS
KICK
TRV
ECM
PC
SENSE
FLOCK
TLOCK
RST
BLKCK
SQCK
SUBQ
STAT
MDATA
MCLK
MLD
27
28
22
25
26
21
24
23
10
11
12
18
13
14
15
17
8
7
9

● **Signal line** ⇨ **: CD signal**


Q1,2,D3,4
REGULATOR
D1,D2
+B1
LM2940T5M
IC1
REGULATOR
+B2
+B3
Q402
INTERFACE
Q403,404
INTERFACE
D6
–B
JK401
1 AC
2 REQ
3 CT
4 CS
5 AC
6 D.GND
7 CLK
8 DATA
9 G.DECK
10 ——
11 ——
12 A.GND
13 KEY 2
14 KEY-IN
15 REF-M
16 R CH OUT
17 A.GND
18 A.GND
19 L CH OUT
ST-CA10
JK602
R ch
BA4558FHTT1
IC801
L.P.F.
+B3
–B
KEY SWITCH
NJU3713GTE1
IC601
LED DRIVE
+B2
Q401
RESET SIGNAL GENERATOR
X401(4.23MHz)
6 RST
21 CLK
20 DTO
19 DTI
18 REQ
17 CS
32 KEY2
31 KEY1
4 OSC2
3 OSC1
25 LDATA
24 LCLK
23 LSTB
11 MLD
13 MCLK
12 MDATA
42 STAT
43 SUBQ
LC66538A4G99
IC401
SYSTEM CONTROL
45 SQCK
46 BLKCK
41 SVRST
39 TLOCK
38 FLOCK
37 SENSE
5 VDD
2 VSS
40 REST SW
27 STOCK SW
33 PLY SW
28 UP SW
34 OPEN SW
7 NO SW
36 FWD
35 REV
+B2
S701(REST)
+B2
S1(STOCKER POSITION DET.)
S2(PLAY POSITON DET.)
S3(UP POSITION DET.)
S4(TRAY OPEN DET.)
S5(DISC NUMBER DET.)
BA6418N
IC1
MOTOR DRIVE
1
3
2,5,8
6
+B1
7
9
M
LOADING MOTOR

# ■ SCHEMATIC DIAGRAM (Parts list on pages 37, 38, 41, 42.)

- This schematic diagram may be modified at any time with the development of new technology.

Page
**A** SERVO CIRCUIT ........ 26, 27
**B** SWITCH CIRCUIT ........ 28
**C** SWITCH (S2, S3) CIRCUIT ........ 28
**D** LED CIRCUIT ........ 28

Page
**E** LOADING MOTOR CIRCUIT ........ 28
**F** OPERATION CIRCUIT ........ 28
**G** MAIN CIRCUIT ........ 28, 29

**Notes:**

- **S1** : Stocker position detect switch
- **S2** : Play position detect switch
- **S3** : Up position detect switch
- **S4** : Tray open detect switch
- **S5** : Disc number detect switch
- **S601~S605**: Disc select switch (DISC) [S601: DISC 5, S602: DISC 4, S603: DISC 3, S604: DISC 2, S605: DISC 1]
- **S606**: Disc check switch (DISC CHECK)
- **S607**: Repeat switch (REPEAT)
- **S608**: AI edit switch (AI EDIT)
- **S609**: Random play switch (RANDOM)
- **S610**: R. skip/ search switch (⏮/◀◀)
- **S611**: Stop switch (□)
- **S612**: Play switch (▷)
- **S613**: F. skip/ search switch (▶▶/⏭)
- **S614**: Pause switch: (❚❚)
- **S615**: Disc tray open/close switch (▲OPEN/CLOSE)
- **S701**: Rest detect switch
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

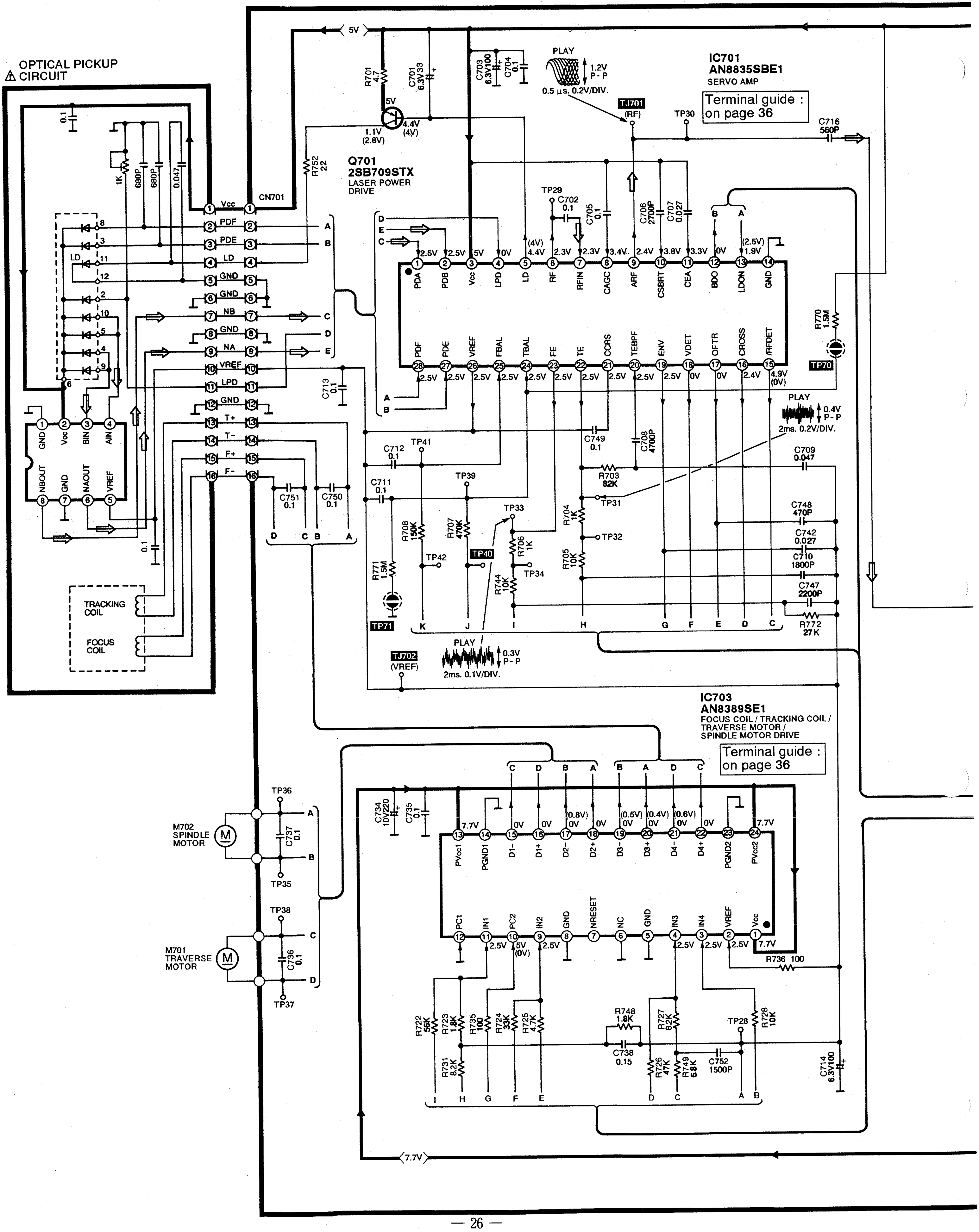
  No mark: CD STOP
  (    ): CD play [1kHz, L+R, 0dB]

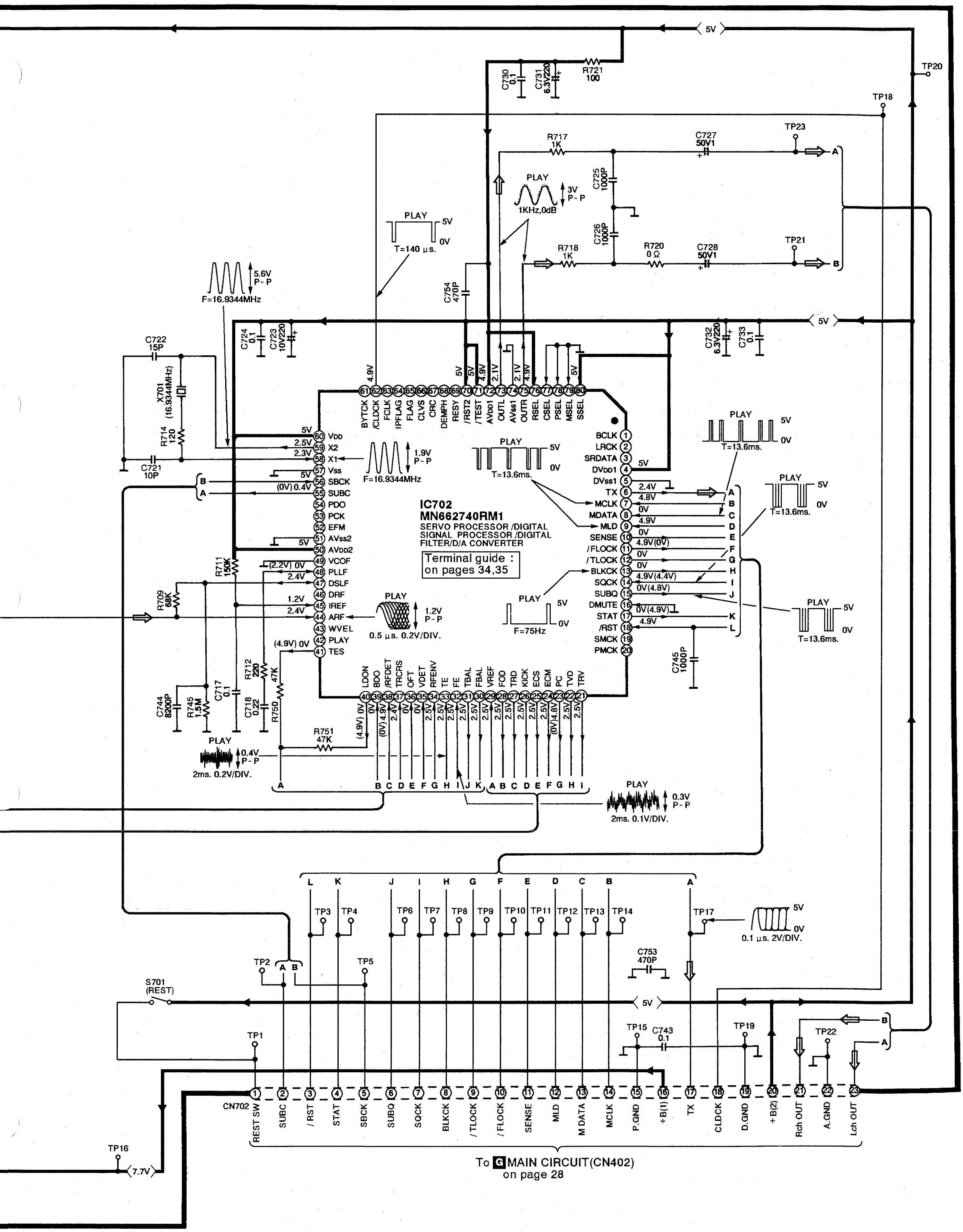
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

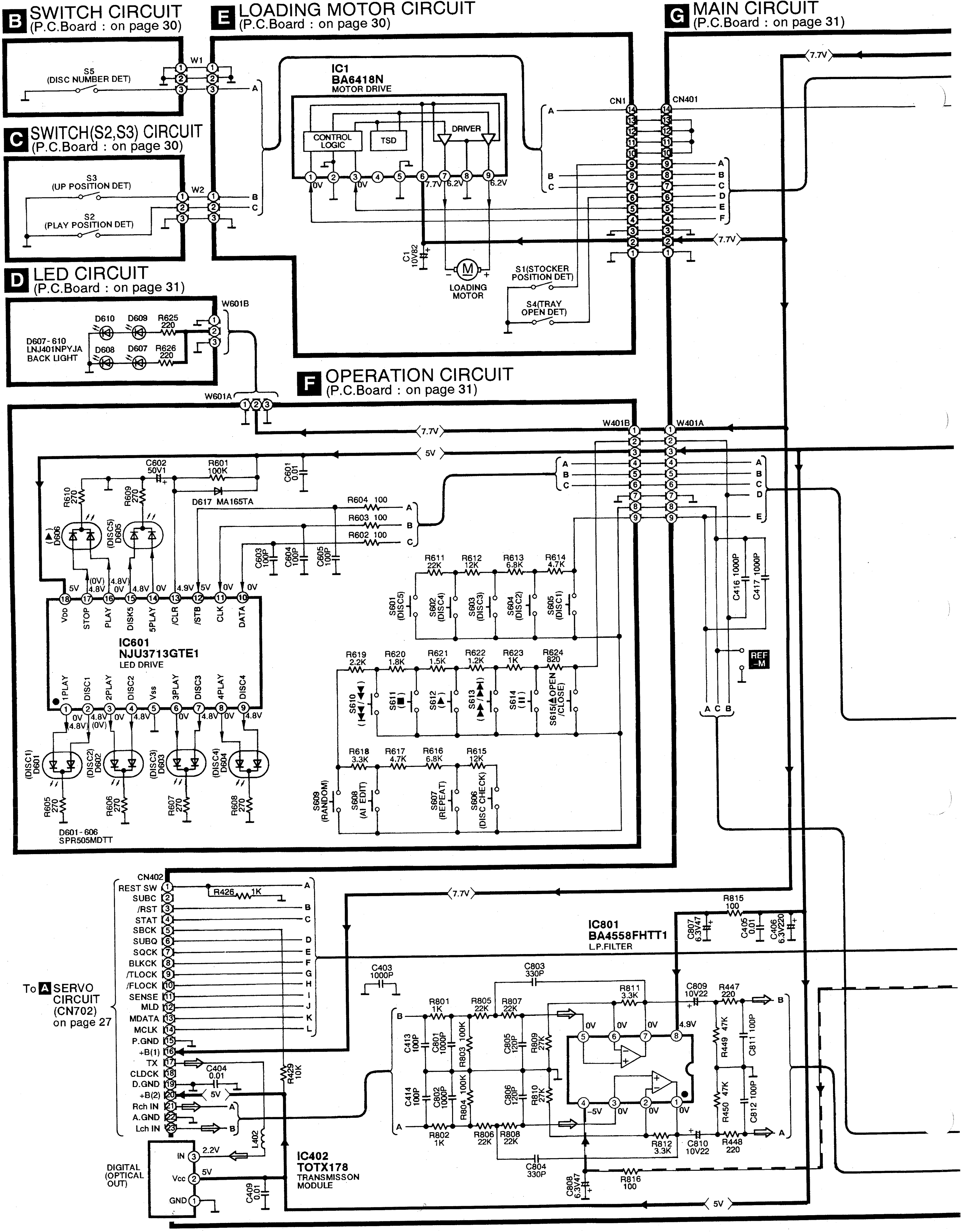
- Caution!
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

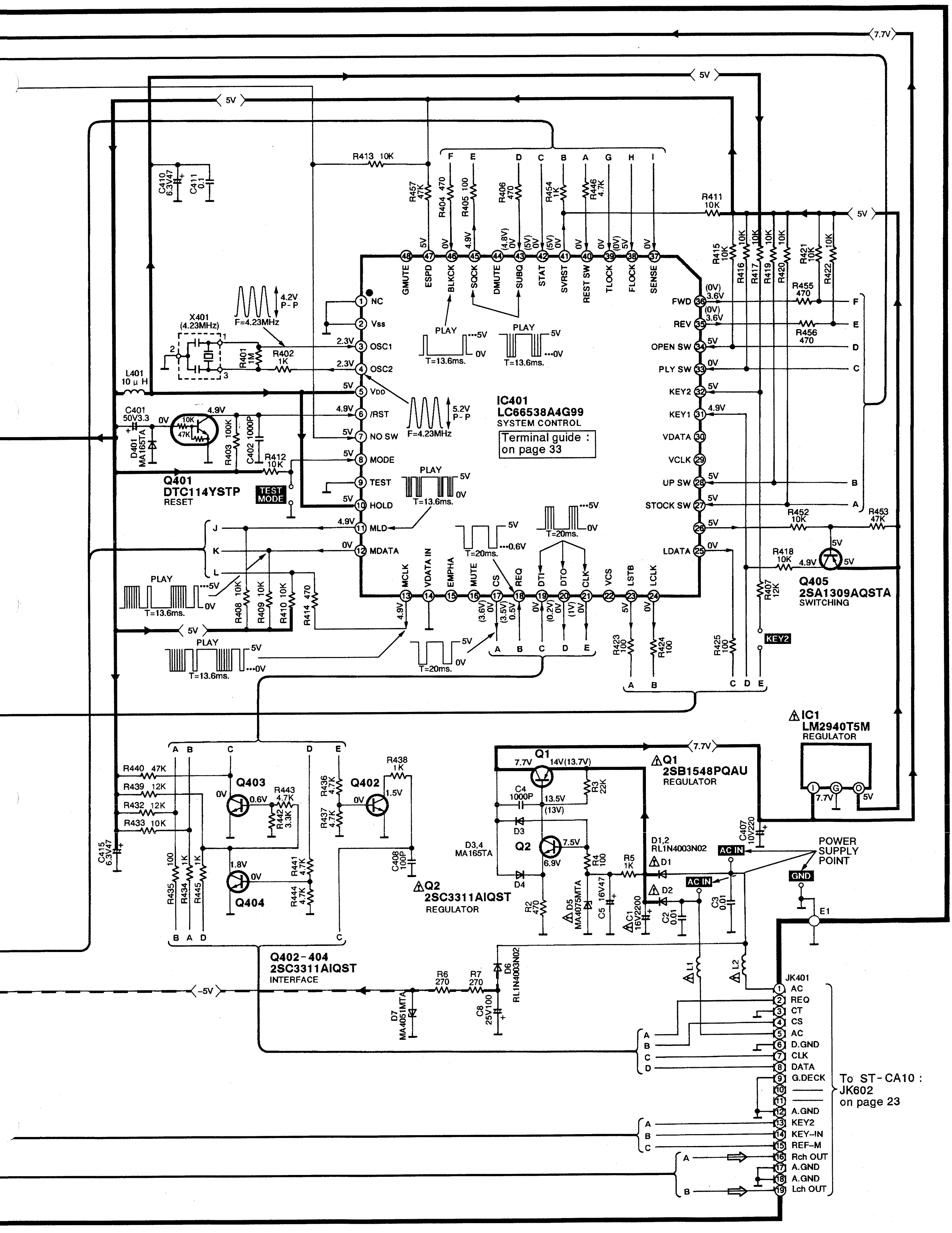
- Voltage and signal line
  ━━▶━━: Positive voltage line
  ■■■▶■■■: Negative voltage line
  ⇨ : CD signal line

## A SERVO CIRCUIT
(P.C.Board : on page 30)


OPTICAL PICKUP
⚠ CIRCUIT
CN701
Vcc
PDF
PDE
LD
GND
NB
NA
VREF
LPD
T+
T-
F+
F-
GND
Vcc
BIN
AIN
NBOUT
GND
NAOUT
VREF
TRACKING COIL
FOCUS COIL
5V
R701 4.7
C701 6.3V33
C703 6.3V100
C704 0.1
Q701
2SB709STX
LASER POWER DRIVE
1.1V (2.8V)
4.4V (4V)
R752 22
PLAY
1.2V P-P
0.5 µs. 0.2V/DIV.
TJ701 (RF)
TP30
IC701
AN8835SBE1
SERVO AMP
Terminal guide : on page 36
C716 560P
TP29
C702 0.1
C705 0.1
C706 2700P
C707 0.027
PDA
PDB
Vcc
LPD
LD
RF
RFIN
CAGC
ARF
CSBRT
CEA
BDO
LDON
GND
PDF
PDE
VREF
FBAL
TBAL
FE
TE
CCRS
TEBPF
ENV
VDET
OFTR
CROSS
/RFDET
R770 1.5M
TP70
PLAY
0.4V P-P
2ms. 0.2V/DIV.
C713 0.1
C749 0.1
C708 4700P
C709 0.047
R703 82K
TP31
C712 0.1
TP41
C711 0.1
TP39
TP33
R708 150K
R707 470K
R706 1K
R704 1K
TP32
R705 10K
TP42
TP40
TP34
R744 10K
R771 1.5M
TP71
C748 470P
C742 0.027
C710 1800P
C747 2200P
R772 27K
C751 0.1
C750 0.1
PLAY
0.3V P-P
2ms. 0.1V/DIV.
TJ702 (VREF)
IC703
AN8389SE1
FOCUS COIL / TRACKING COIL / TRAVERSE MOTOR / SPINDLE MOTOR DRIVE
Terminal guide : on page 36
C734 10V220
C735 0.1
PVcc1
PGND1
D1-
D1+
D2-
D2+
D3-
D3+
D4-
D4+
PGND2
PVcc2
PC1
IN1
PC2
IN2
GND
NRESET
NC
GND
IN3
IN4
VREF
Vcc
7.7V
R736 100
TP36
M702 SPINDLE MOTOR
C737 0.1
TP35
TP38
M701 TRAVERSE MOTOR
C736 0.1
TP37
R722 56K
R723 1.8K
R735 100
R724 33K
R725 4.7K
R748 1.8K
C738 0.15
R727 8.2K
R726 47K
R749 6.8K
C752 1500P
TP28
R728 10K
R731 8.2K
C714 6.3V100
7.7V


IC702
MN662740RM1
SERVO PROCESSOR /DIGITAL SIGNAL PROCESSOR /DIGITAL FILTER/D/A CONVERTER
Terminal guide : on pages 34,35
5V
TP20
TP18
TP23
TP21
TP16
TP1
TP2
TP5
TP15
TP17
TP19
TP22
R721 100
C730 0.1
C731 6.3V220
R717 1K
C727 50V1
C725 1000P
C726 1000P
R718 1K
R720 0Ω
C728 50V1
C754 470P
C724 0.1
C723 10V220
C732 6.3V220
C733 0.1
C722 15P
X701 (16.9344MHz)
R714 120
C721 10P
R711 150K
R709 68K
R712 220
C717 0.1
C718 0.22
R750 47K
C744 8200P
R745 1.5M
R751 47K
C745 1000P
C753 470P
C743 0.1
S701 (REST)
CN702
PLAY
1KHz,0dB
3V P-P
T=140 µs.
F=16.9344MHz
5.6V P-P
1.9V P-P
T=13.6ms.
F=75Hz
0.5 µs. 0.2V/DIV.
1.2V P-P
2ms. 0.2V/DIV.
0.4V P-P
2ms. 0.1V/DIV.
0.3V P-P
0.1 µs. 2V/DIV.
7.7V
BYTCK /CLDCK FCLK IPFLAG FLAG CLVS CRC DEMPH RESY /RST2 /TEST AVDD1 OUTL AVss1 OUTR RSEL CSEL PSEL MSEL SSEL
VDD X2 X1 Vss SBCK SUBC PDO PCK EFM AVss2 AVDD2 VCOF PLLF DSLF DRF IREF ARF WVEL PLAY TES
BCLK LRCK SRDATA DVDD1 DVss1 TX MCLK MDATA MLD SENSE /FLOCK /TLOCK BLKCK SQCK SUBQ DMUTE STAT /RST SMCK PMCK
LDON BDO /RFDET TRCRS OFT VDET RFENV TE FE TBAL FBAL VREF FOD TRD KICK ECS ECM PC TVD TRV
REST SW SUBC /RST STAT SBCK SUBQ SQCK BLKCK /TLOCK /FLOCK SENSE MLD M DATA MCLK P.GND +B(1) TX CLDCK D.GND +B(2) Rch OUT A.GND Lch OUT
To G MAIN CIRCUIT(CN402) on page 28

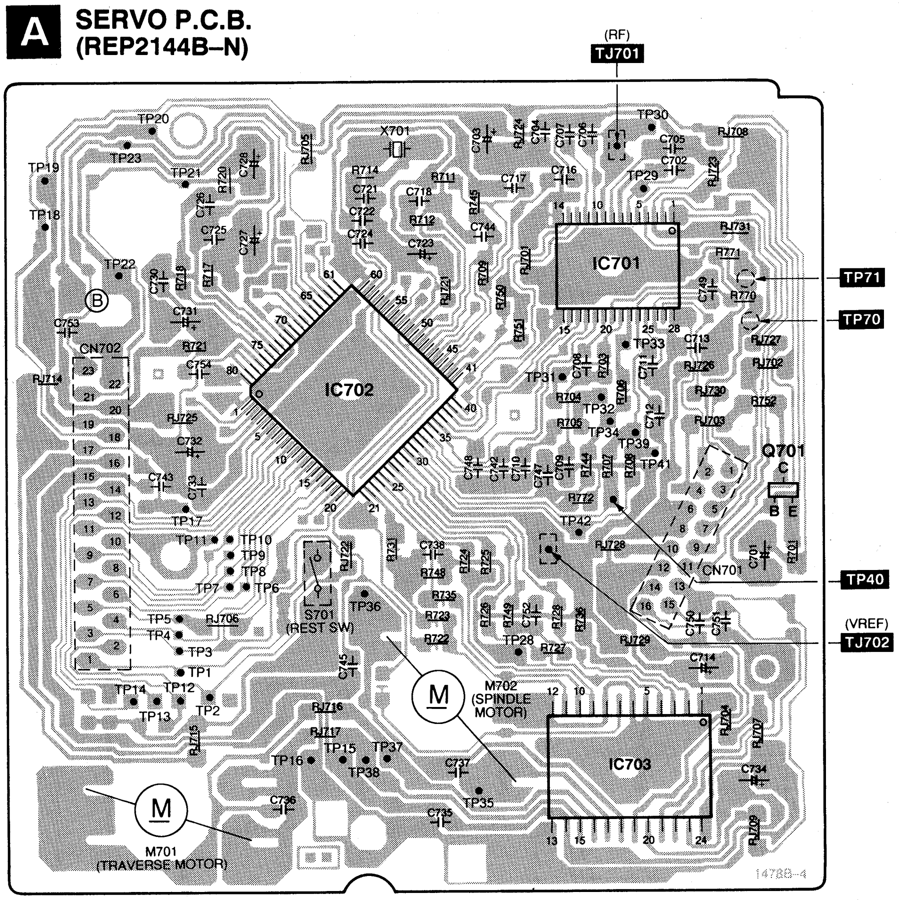

B SWITCH CIRCUIT
(P.C.Board : on page 30)
S5
(DISC NUMBER DET)
W1
C SWITCH(S2,S3) CIRCUIT
(P.C.Board : on page 30)
S3
(UP POSITION DET)
S2
(PLAY POSITION DET)
W2
D LED CIRCUIT
(P.C.Board : on page 31)
D610 D609 R625 220
D607-610
LNJ401NPYJA
BACK LIGHT
D608 D607 R626 220
W601B
W601A
E LOADING MOTOR CIRCUIT
(P.C.Board : on page 30)
IC1
BA6418N
MOTOR DRIVE
CONTROL LOGIC
TSD
DRIVER
0V 0V 7.7V 6.2V 6.2V
C1 10V82
LOADING MOTOR
S1(STOCKER POSITION DET)
S4(TRAY OPEN DET)
CN1
CN401
G MAIN CIRCUIT
(P.C.Board : on page 31)
7.7V
F OPERATION CIRCUIT
(P.C.Board : on page 31)
W401B
W401A
7.7V
5V
C602 50V1
R601 100K
C601 0.01
D617 MA165TA
R610 270
R609 270
D606
(DISC5) D605
R604 100
R603 100
R602 100
C603 100P
C604 100P
C605 100P
5V (0V) 4.8V (4.8V) 0V 4.8V 0V 4.9V 5V 0V 0V
VDD STOP PLAY DISK5 5PLAY /CLR /STB CLK DATA
IC601
NJU3713GTE1
LED DRIVE
1PLAY DISC1 2PLAY DISC2 Vss 3PLAY DISC3 4PLAY DISC4
0V 4.8V (4.8V) (0V) 0V 4.8V 0V 4.8V 0V 4.8V
(DISC1) D601
(DISC2) D602
(DISC3) D603
(DISC4) D604
R605 270
R606 270
R607 270
R608 270
D601-606
SPR505MDTT
R611 22K
R612 12K
R613 6.8K
R614 4.7K
S601 (DISC5)
S602 (DISC4)
S603 (DISC3)
S604 (DISC2)
S605 (DISC1)
R619 2.2K
R620 1.8K
R621 1.5K
R622 1.2K
R623 1K
R624 820
S610
S611
S612
S613
S614
S615 (OPEN/CLOSE)
R618 3.3K
R617 4.7K
R616 6.8K
R615 12K
S609 (RANDOM)
S608 (AI EDIT)
S607 (REPEAT)
S606 (DISC CHECK)
C416 1000P
C417 1000P
REF -M
CN402
REST SW
SUBC
/RST
STAT
SBCK
SUBQ
SQCK
BLKCK
/TLOCK
/FLOCK
SENSE
MLD
MDATA
MCLK
P.GND
+B(1)
TX
CLDCK
D.GND
+B(2)
Rch IN
A.GND
Lch IN
R426 1K
To A SERVO CIRCUIT (CN702) on page 27
C404 0.01
5V
R429 10K
L402
2.2V
5V
DIGITAL (OPTICAL OUT)
IN
Vcc
GND
C409 0.01
IC402
TOTX178
TRANSMISSON MODULE
IC801
BA4558FHTT1
L.P.FILTER
R815 100
C807 6.3V47
C405 0.01
C406 6.3V220
C403 1000P
C803 330P
R801 1K
R805 22K
R807 22K
R811 3.3K
C809 10V22
R447 220
C413 100P
C801 1000P
R803 100K
C805 120P
R809 27K
0V 0V 0V 4.9V
R449 47K
C811 100P
C414 100P
C802 1000P
R804 100K
C806 120P
R810 27K
-5V 0V 0V 0V
R450 47K
C812 100P
R802 1K
R806 22K
R808 22K
R812 3.3K
C810 10V22
R448 220
C804 330P
C808 6.3V47
R816 100
5V


7.7V
5V
R413 10K
R457 47K
R404 470
R405 100
R406 470
R454 1K
R446 4.7K
R411 10K
C410 6.3V47
C411 0.1
F E D C B A G H I
GMUTE
ESPD
BLKCK
SQCK
DMUTE
SUBQ
STAT
SVRST
REST SW
TLOCK
FLOCK
SENSE
R415 10K
R416 10K
R417 10K
R419 10K
R420 10K
R421 10K
R422 10K
R455 470
R456 470
X401 (4.23MHz)
4.2V P-P
F=4.23MHz
R401 1M
R402 1K
L401 10 µ H
C401 50V3.3
D401 MA165TA
R403 100K
C402 1000P
R412 10K
Q401
DTC114YSTP
RESET
TEST MODE
NC
Vss
OSC1
OSC2
VDD
/RST
NO SW
MODE
TEST
HOLD
MLD
MDATA
5.2V P-P
F=4.23MHz
PLAY
T=13.6ms.
IC401
LC66538A4G99
SYSTEM CONTROL
Terminal guide : on page 33
FWD
REV
OPEN SW
PLY SW
KEY2
KEY1
VDATA
VCLK
UP SW
STOCK SW
LDATA
R452 10K
R453 47K
R418 10K
Q405
2SA1309AQSTA
SWITCHING
R407 12K
KEY2
T=20ms.
MCLK
VDATA IN
EMPHA
MUTE
CS
REQ
DTI
DTO
CLK
VCS
LSTB
LCLK
R408 10K
R409 10K
R410 10K
R414 470
R423 100
R424 100
R425 100
J K L
A B C D E
⚠IC1
LM2940T5M
REGULATOR
Q1
⚠Q1
2SB1548PQAU
REGULATOR
14V(13.7V)
C4 1000P
R3 22K
13.5V (13V)
D3
D3,4 MA165TA
Q2
7.5V
6.9V
D4
R4 100
R2 470
⚠D5 MA4075MTA
C5 16V47
D1,2 RL1N4003N02
⚠D1
⚠D2
R5 1K
⚠C1 16V2200
C2 0.01
C3 0.01
C407 10V220
AC IN
POWER SUPPLY POINT
GND
E1
⚠L1
⚠L2
R440 47K
R439 12K
R432 12K
R433 10K
C415 6.3V47
Q403
R443 4.7K
R442 3.3K
R436 4.7K
R437 4.7K
Q402
R438 1K
C408 100P
Q404
R441 4.7K
R444 4.7K
R435 100
R434 1K
R445 1K
⚠Q2
2SC3311AIQST
REGULATOR
Q402-404
2SC3311AIQST
INTERFACE
-5V
R6 270
R7 270
D6 RL1N4003N02
D7 MA4051MTA
C8 25V100
JK401
AC
REQ
CT
CS
AC
D.GND
CLK
DATA
G.DECK
A.GND
KEY2
KEY-IN
REF-M
Rch OUT
A.GND
A.GND
Lch OUT
To ST-CA10 : JK602 on page 23

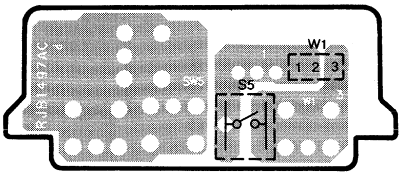
# PRINTED CIRCUIT BOARD DIAGRAM

- This printed circuit board diagram may be modified at any time with the development of new technology.

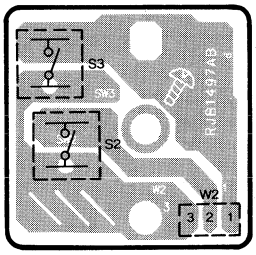
## A SERVO P.C.B. (REP2144B–N)


(RF)
TJ701
TP20
TP23
TP19
TP18
TP21
TP22
CN702
X701
IC701
IC702
IC703
TP30
TP29
TP71
TP70
TP31
TP32
TP33
TP34
TP39
TP41
TP42
Q701
C
B E
CN701
TP40
(VREF)
TJ702
TP17
TP11
TP10
TP9
TP8
TP7
TP6
TP5
TP4
TP3
TP1
TP14
TP12
TP13
TP2
S701
(REST SW)
TP36
TP28
M
M702
(SPINDLE MOTOR)
TP15
TP37
TP16
TP38
TP35
M701
(TRAVERSE MOTOR)
14788-4

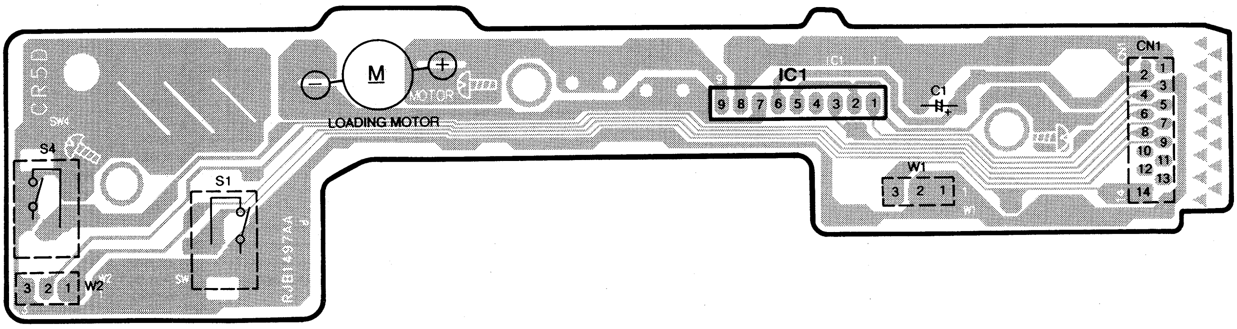
## B SWITCH P.C.B. (REP2182A–N)


W1
1 2 3
S5
RJB1497AC

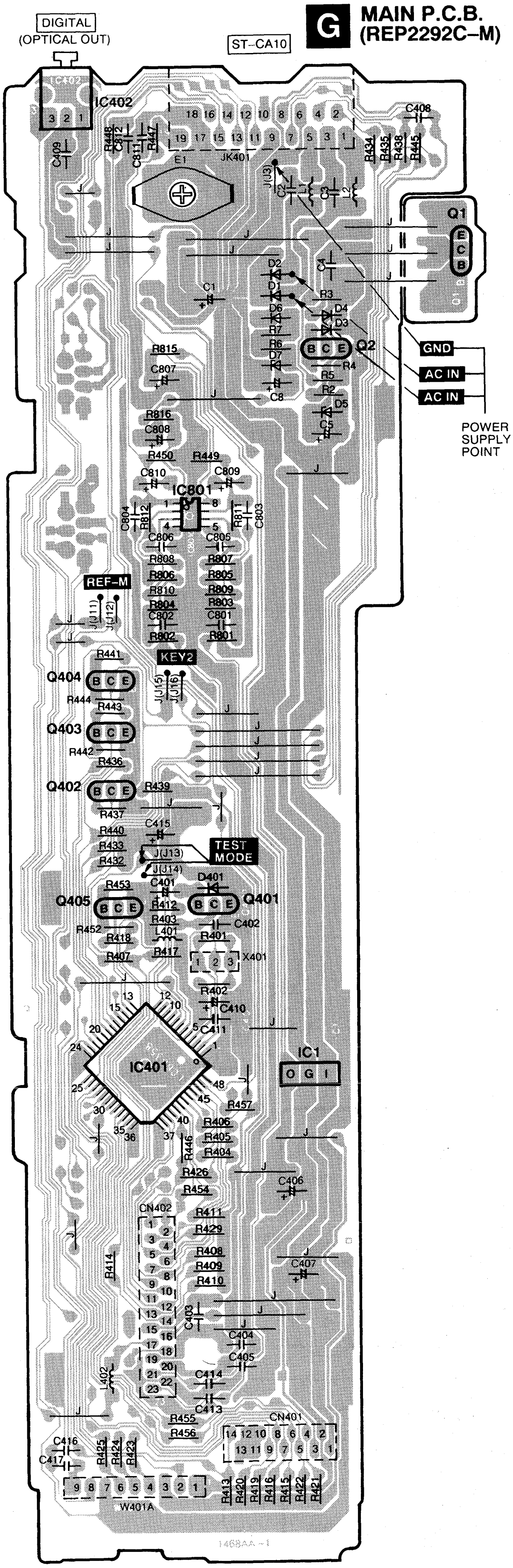
## C SWITCH(S2,S3) P.C.B. (REP2182A–N)


S3
S2
W2
3 2 1
RJB1497AB

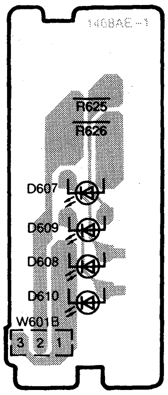
## E LOADING MOTOR P.C.B. (REP2182A–N)


M
LOADING MOTOR
IC1
9 8 7 6 5 4 3 2 1
C1
CN1
1 2 3 4 5 6 7 8 9 10 11 12 13 14
W1
3 2 1
S4
S1
W2
3 2 1
RJB1497AA

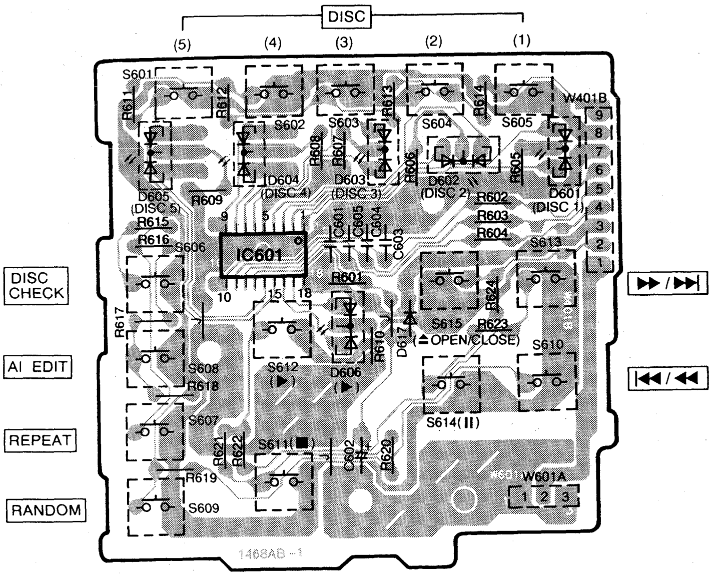
## G MAIN P.C.B. (REP2292C–M)


DIGITAL
(OPTICAL OUT)
ST-CA10
IC402
JK401
E1
C408
R448
C812
C811
R447
R434
R435
R438
R445
C409
J(J3)
C2
L1
C3
L2
Q1
E
C
B
C4
D2
D1
R3
D6
D4
R7
D3
R6
Q2
B C E
D7
R4
C1
C8
R5
R2
D5
C5
GND
AC IN
AC IN
POWER
SUPPLY
POINT
R815
C807
R816
C808
R450
R449
C810
C809
IC801
C804
R812
R811
C803
C806
C805
R808
R807
R806
R805
R810
R809
R804
R803
C802
C801
R802
R801
REF–M
J(J11)
J(J12)
KEY2
R441
Q404
R444
R443
J(J15)
J(J16)
Q403
R442
R436
Q402
R439
R437
R440
C415
R433
J(J13)
TEST
MODE
R432
J(J14)
D401
R453
C401
Q405
Q401
R412
C402
R452
R403
L401
R418
R401
R407
R417
X401
R402
C410
C411
IC401
IC1
O G I
R457
R406
R405
R446
R404
R426
C406
R454
CN402
R411
R429
R414
R408
R409
R410
C407
C403
C404
C405
L402
C414
C413
R455
CN401
R456
C416
C417
R425
R424
R423
W401A
R413
R420
R419
R416
R415
R422
R421
1468AA-1

## D LED P.C.B. (REP2292C–M)

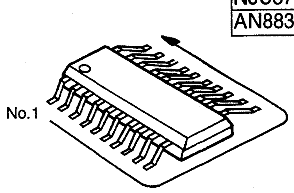

1468AE-1
R625
R626
D607
D609
D608
D610
W601B
3 2 1

## F OPERATION P.C.B. (REP2292C–M)


DISC
(5)
(4)
(3)
(2)
(1)
S601
R611
R612
S602
S603
R613
S604
R614
S605
W401B
R608
R607
R606
R605
D605
(DISC 5)
D604
(DISC 4)
D603
(DISC 3)
D602
(DISC 2)
D601
(DISC 1)
R609
R602
R603
R604
R615
R616
S606
C601
C605
C604
C603
IC601
S613
DISC
CHECK
R601
▶▶/▶▶|
R617
R624
D617
S615
R623
(≜OPEN/CLOSE)
S610
AI EDIT
S608
S612
(▶)
D606
(▶)
R610
|◀◀/◀◀
R618
S614(❙❙)
REPEAT
S607
R621
R622
S611(■)
C602
R620
R619
W601A
1 2 3
RANDOM
S609
1468AB-1

## • Terminal guide of IC's , transistors and diodes

| | |
|---|---|
| NJU3713GTE1 | 18PIN |
| AN8835SBE1 | 28PIN |



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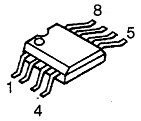

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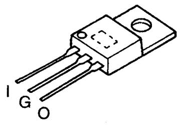

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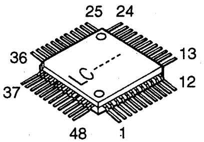
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48
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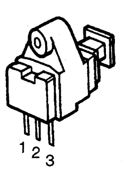
TOTX178



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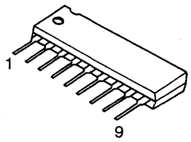

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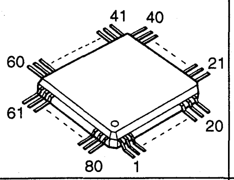
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61
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80
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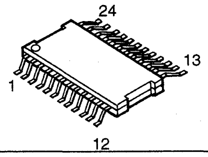
AN8389SE1



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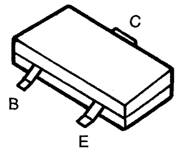

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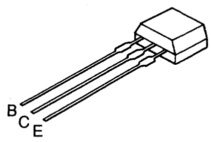

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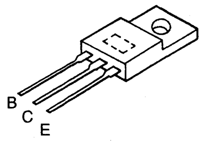

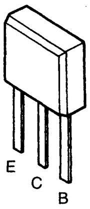

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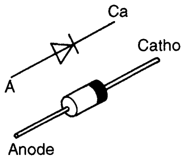
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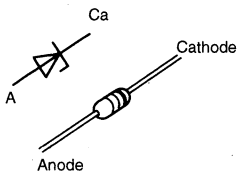
Cathode
A
Anode

MA4051MTA
MA4075MTA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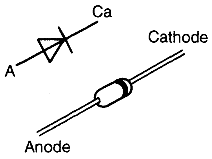
A
Anode

MA165TA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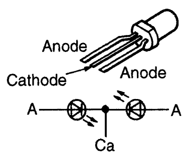
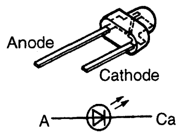
Cathode
A
Anode

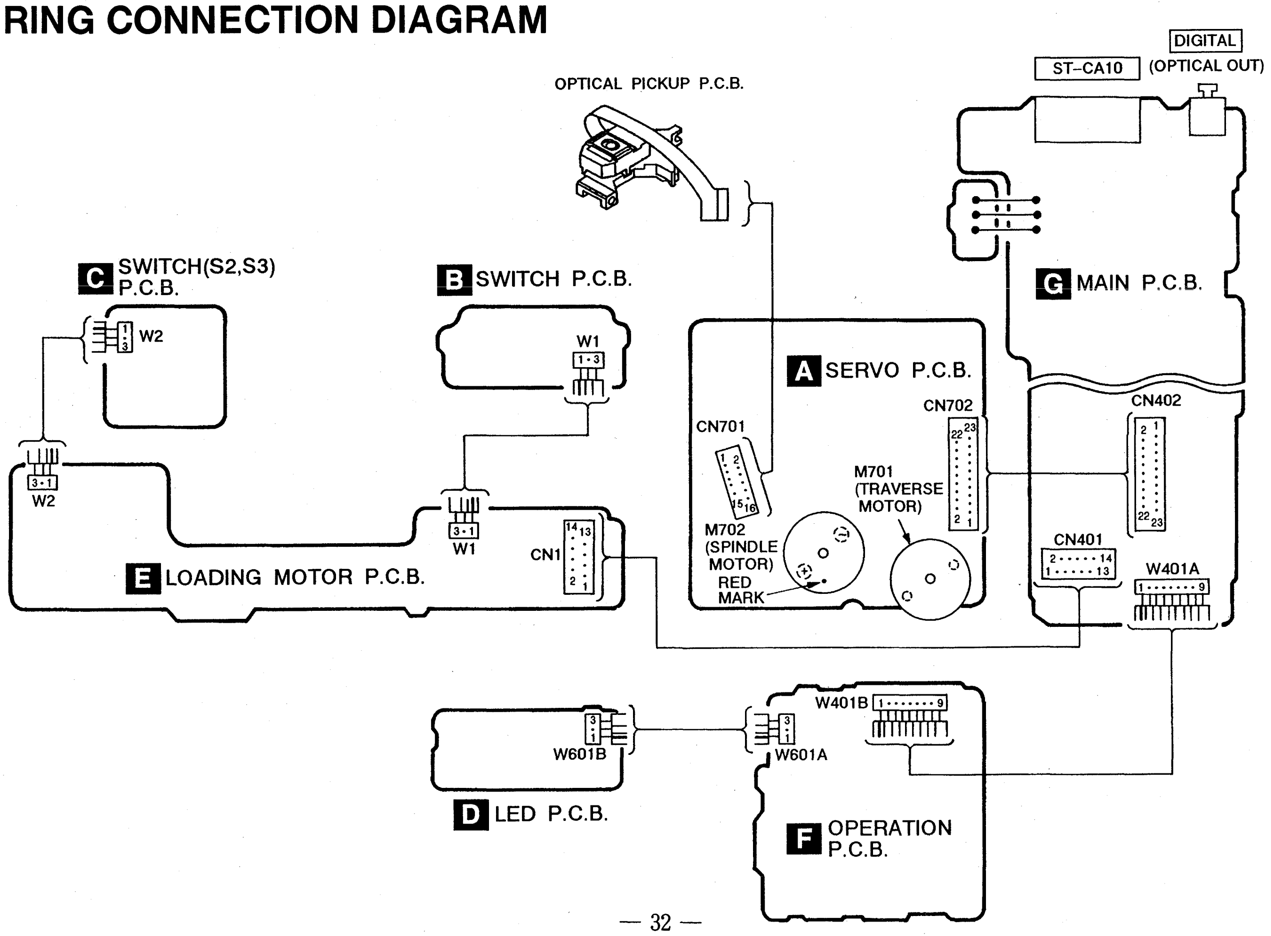
SPR505MDTT


Anode
Cathode
Anode
A
A
Ca

LNJ401NPYJA


Anode
Cathode
A
Ca

## WIRING CONNECTION DIAGRAM


DIGITAL
ST-CA10
(OPTICAL OUT)
OPTICAL PICKUP P.C.B.
G MAIN P.C.B.
C SWITCH(S2,S3) P.C.B.
W2
3·1
B SWITCH P.C.B.
W1
1·3
A SERVO P.C.B.
CN701
CN702
CN402
M701 (TRAVERSE MOTOR)
M702 (SPINDLE MOTOR)
RED MARK
E LOADING MOTOR P.C.B.
CN1
CN401
W401A
W401B
W601B
W601A
D LED P.C.B.
F OPERATION P.C.B.

# TERMINAL GUIDE

## • IC401 (LC66538A4G99): System Control

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 1 | NC | – | Not used, connected to GND |
| 2 | VSS | – | GND terminal |
| 3 | OSC1 | I | Crystal OSC terminal (f=4.23 MHz) |
| 4 | OSC2 | O | |
| 5 | VDD | I | Power supply terminal |
| 6 | /RST | I | Reset signal input terminal ("L"=RESET) |
| 7 | NO SW | I | Disc tray No. det. input terminal |
| 8 | MODE | I | Test mode signal input terminal |
| 9 | TEST | – | Test terminal |
| 10 | HOLD | I | Not used, connected to power supply |
| 11 | MLD | O | Command load signal |
| 12 | MDATA | O | Command data signal |
| 13 | MCLK | O | Command clock signal |
| 14 | VDATA IN | – | Not used, connected to GND |
| 15 | EMPHA | – | Not used, open |
| 16 | MUTE | – | Not used, open |
| 17 | CS | O | Communication request signal to ST-CA10 |
| 18 | REQ | I | Communication request signal from ST-CA10 |
| 19 | DTI | I | Communication data signal from ST-CA10 |
| 20 | DTO | O | Communication data signal to ST-CA10 |
| 21 | CLK | O | Communication clock signal to ST-CA10 |
| 22 | VCS | – | Not used, open |
| 23 | LSTB | O | LED drive output terminal |
| 24 | LCLK | O | LED drive command clock output terminal |

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 25 | LDATA | O | LED drive command clock output terminal |
| 26 | – | – | Not used, connected to power supply |
| 27 | STOCK SW | I | Stocker position det. input terminal |
| 28 | UP SW | I | Disc tray up position det. input terminal |
| 29 | VCLK | – | Not used, open |
| 30 | VDATA | – | Not used, open |
| 31 | KEY1 | I | Key switch det. input terminal |
| 32 | KEY2 | | |
| 33 | PLY SW | I | Disc tray play position det. input terminal |
| 34 | OPEN SW | I | Disc tray open position det. input terminal |
| 35 | REV | O | Loading motor reverse signal output terminal |
| 36 | FWD | O | Loading motor forward signal output terminal |
| 37 | SENSE | I | Sense signal input terminal |
| 38 | FLOCK | I | Optical servo condition (focus) ("L": lead-in) |
| 39 | TLOCK | I | Optical servo condition (tracking) ("L": lead-in) |
| 40 | REST SW | I | Rest position det. input terminal |
| 41 | SVRST | O | Reset signal to servo processor |
| 42 | STAT | I | Status signal input terminal |
| 43 | SUBQ | I | Sub-code Q data input terminal |
| 44 | DMUTE | – | Not used, open |
| 45 | SQCK | O | Sub-code Q resister clock output terminal |
| 46 | BLKCK | I | Sub-code block clock input terminal (f=75Hz) |
| 47 | ESPD | – | Not used, connected to power supply |
| 48 | GMUTE | – | Not used, open |

## ● IC702 (MN662740RM1): Servo processor/ digital signal processor/ digital filter/ D/A converter

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 1 | BCLK | O | Serial bit clock terminal (Not used, open) |
| 2 | LRCK | O | L/R discriminating signal (Not used, open) |
| 3 | SRDATA | O | Serial data (Not used, open) |
| 4 | DVDD1 | I | Power supply (digital circuit) terminal |
| 5 | DVss 1 | — | GND (digital circuit) terminal |
| 6 | TX | O | Digital audio interface signal |
| 7 | MCLK | I | Command clock signal |
| 8 | MDATA | I | Command data signal |
| 9 | MLD | I | Command load signal ("L":LOAD) |
| 10 | SENSE | O | Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG) |
| 11 | /FLOCK | O | Optical servo condition (focus) ("L": lead-in) |
| 12 | /TLOCK | O | Optical servo condition (tracking) ("L": lead-in) |
| 13 | BLKCK | O | Sub-code block clock (f=75Hz) (Not used, open) |
| 14 | SQCK | I | Sub-code Q register clock |
| 15 | SUBQ | O | Sub-code Q data |
| 16 | DMUTE | I | Muting input ("H": MUTE) (Not used, connected to GND) |
| 17 | STAT | O | Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK) |
| 18 | /RST | I | Reset signal ("L": reset) |
| 19 | SMCK | O | System clock (f=4.2336MHz) (Not used, open) |
| 20 | PMCK | O | Frequency division clock signal (No used, open)<br>(f=$\frac{1}{1.92}$x ck=88.2kHz) |
| 21 | TRV | O | Traverse servo control |
| 22 | TVD | O | Traverse drive signal |
| 23 | PC | O | Turntable motor drive signal ("L": ON) |
| 24 | ECM | O | Turntable motor drive signal (Forced mode) |
| 25 | ECS | O | Turntable motor drive signal (Servo error signal) |
| 26 | KICK | O | Kick pulse output |
| 27 | TRD | O | Tracking drive signal output |
| 28 | FOD | O | Focus drive signal output |
| 29 | VREF | I | D/A drived output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal |
| 30 | FBAL | O | Focus balance adj. output |
| 31 | TBAL | O | Tracking balancef adj. output |
| 32 | FE | I | Focus error signal (analog input) |
| 33 | TE | I | Tracking error signal (analog input) |
| 34 | RFENV | I | RF envelope signal |
| 35 | VDET | I | Oscillation det. signal ("H": det.) |
| 36 | OFT | I | Off track signal ("H": Off track) |
| 37 | TRCRS | I | Track cross signal input |
| 38 | /RFDET | I | RF detection signal ("L": detection) |
| 39 | BDO | I | Dropout detection signal ("H": dropout) |
| 40 | LDON | O | Laser power control ("H": ON) |
| 41 | TES | O | Tracking error shunt output ("H": dropout) |
| 42 | PLAY | O | Play signal ("H": play) (Not used, open) |

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 43 | WVEL | O | Double velocity status signal ("H": double) (Not used, open) |
| 44 | ARF | I | RF signal input |
| 45 | IREF | I | Reference current input |
| 46 | DRF | I | DSL bias terminal (Not used, open) |
| 47 | DSLF | I/O | DSL loop filter terminal |
| 48 | PLLF | I/O | PLL loop filter terminal |
| 49 | VCOF | I/O | VCO loop filter terminal |
| 50 | AVDD2 | I | Power supply (analog circuit) terminal(2) |
| 51 | AVss2 | — | GND (analog circuit) terminal |
| 52 | EFM | O | EFM signal (Not used, open) |
| 53 | PCK | O | PLL extract clock<br>(f= 4.3218MHz)<br>(Not used, open) |
| 54 | PDO | O | Phase comparated signal of EFM and PCK<br>(Not used, open) |
| 55 | SUBC | O | Sub-code serial output clock (Not used, open) |
| 56 | SBCK | I | Sub-code serial data (Not used, connected to power supply) |
| 57 | V ss | — | GND terminal |
| 58 | X1 | I | Crystal oscillator terminal<br>(f=16.9344MHz) |
| 59 | X2 | O | |
| 60 | VDD | I | Reset signal ("L": reset) |
| 61 | BYTCK | O | Byte clock signal (Not used, open) |
| 62 | /CLDCK | O | Sub-code frame clock signal<br>(f CLDCK=7.35KHz: Normal)<br>(Not used, open) |
| 63 | FCLK | O | Crystal frame clock (Not used, open) |
| 64 | IPFLAG | O | Interpolation flag terminal (Not used, open) |

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 65 | FLAG | O | Flag terminal<br>(Not used, open) |
| 66 | CLVS | O | Turntable servo phase synchro signal<br>("H": CLV, "L": Rough servo)<br>(Not used, open) |
| 67 | CRC | O | Sub-code CRC check terminal<br>("H": ON, "L": NG)<br>(Not used, open) |
| 68 | DEMPH | O | De-emphasis ON signal ("H": ON) (Not used, open) |
| 69 | RESY | O | Re-synchronizing signal of frame sync.<br>(Not used, open) |
| 70 | /RST2 | I | Reset terminal after " MASH" circuit (Not used, connected to power supply) |
| 71 | /TEST | I | Test terminal (Normal: "H")<br>(Not used, connected to power supply) |
| 72 | AVDD1 | I | Power supply (analog circuit) terminal (1) |
| 73 | OUTL | O | Lch audio signal |
| 74 | AV ss1 | — | GND (analog circuit) terminal (1) |
| 75 | OUTR | O | Rch audio signal |
| 76 | RSEL | I | Polarity direction control terminal of RF signal<br>(Not used, connected to power supply |
| 77 | CSEL | I | Frequency control terminal of crystal oscillator (Not used, connected to GND) |
| 78 | PSEL | I | Test terminal (Normal:"L")<br>(Not used, connected to GND) |
| 79 | MSEL | I | "SMCK" terminal frequency select<br>("L": SMCK=4.2336MHz)<br>(Not used, connected to GND) |
| 80 | SSEL | O | "SUBQ" terminal mode select<br>("H": Q code buffer)<br>(Not used, connected to power supply |

## ● IC701 (AN8835SBE1): Servo amp

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 1 | PDA | I | Focus signal input terminal 1 (Ach) |
| 2 | PDB | I | Focus signal input terminal 2 (Bch) |
| 3 | VCC | I | Power supply terminal |
| 4 | LPD | I | Laser PD signal |
| 5 | LD | O | Laser power auto control output |
| 6 | RF | O | RF amp terminal |
| 7 | RF IN | I | AGC input terminal |
| 8 | CAGC | I | AGC detection capacitor input |
| 9 | ARF | O | RF signal |
| 10 | CSBRT | I | OFTR capacitor connection terminal |
| 11 | CEA | I | HPF-AMP capacitor connection terminal |
| 12 | BDO | O | Dropout detection control |
| 13 | LDON | I | LD APC ON/OFF ("H": ON, "L": OFF) |
| 14 | GND | — | GND terminal |

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 15 | /RFDET | O | RF det. signal ("L": det.) |
| 16 | CROSS | O | Tracking error zero cross output |
| 17 | OFTR | O | Off track detection ("H": det.) |
| 18 | VDET | O | Oscillation det. signal ("H": det.) |
| 19 | ENV | O | Envelope output terminal |
| 20 | TEBPF | I | Oscillation detect input terminal (Not used, open) |
| 21 | CCRS | I | CROSS capacitor connection terminal |
| 22 | TE | O | Tracking error signal |
| 23 | FE | O | Focusing error signal |
| 24 | TBAL | I | Tracking balance adj. input |
| 25 | FBAL | I | Focus balance adj. input |
| 26 | VREF | O | Reference voltage output |
| 27 | PDE | I | Tracking signal input terminal 1 (Ech) |
| 28 | PDF | I | Tracking signal input terminal 2 (F ch) |

## ● IC703(AN8389SE1): Focus coil/ tracking coil/ traverse coil/ spindle motor

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 1 | Vcc | I | Power supply terminal |
| 2 | VREF | I | Reference voltage input |
| 3 | IN4 | I | Motor driver (4) input |
| 4 | IN3 | I | Motor driver (3) input |
| 5 | GND | — | GND terminal |
| 6 | NC | — | Not used, connected to GND |
| 7 | NRESET | O | Reset terminal (Not used, open) |
| 8 | GND | — | GND terminal |
| 9 | IN2 | I | Motor driver (2) input |
| 10 | PC2 | I | PC2 (power cut )input |
| 11 | IN1 | I | Motor driver (1) input |
| 12 | PC1 | I | PC1 (power cut) input (Not used, connected to GND) |

| Pin No. | Mark | I/O Division | Function |
|---|---|---|---|
| 13 | PVcc1 | I | Driver power supply (1) |
| 14 | PGND1 | — | Driver GND terminal (1) |
| 15 | D1- | O | Motor driver (1) output terminal (-) |
| 16 | D1+ | O | Motor driver (1) output terminal (+) |
| 17 | D2- | O | Motor driver (2) output terminal (-) |
| 18 | D2+ | O | Motor driver (2) output terminal (+) |
| 19 | D3- | O | Motor driver (3) output terminal (-) |
| 20 | D3+ | O | Motor driver (3) output terminal (+) |
| 21 | D4- | O | Motor driver (4) output terminal (-) |
| 22 | D4+ | O | Motor driver (4) output terminal (+) |
| 23 | PGND2 | — | Driver GND terminal (2) |
| 24 | PVcc2 | I | Driver power supply (2) |

# RESISTORS AND CAPACITORS

**Notes:** * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

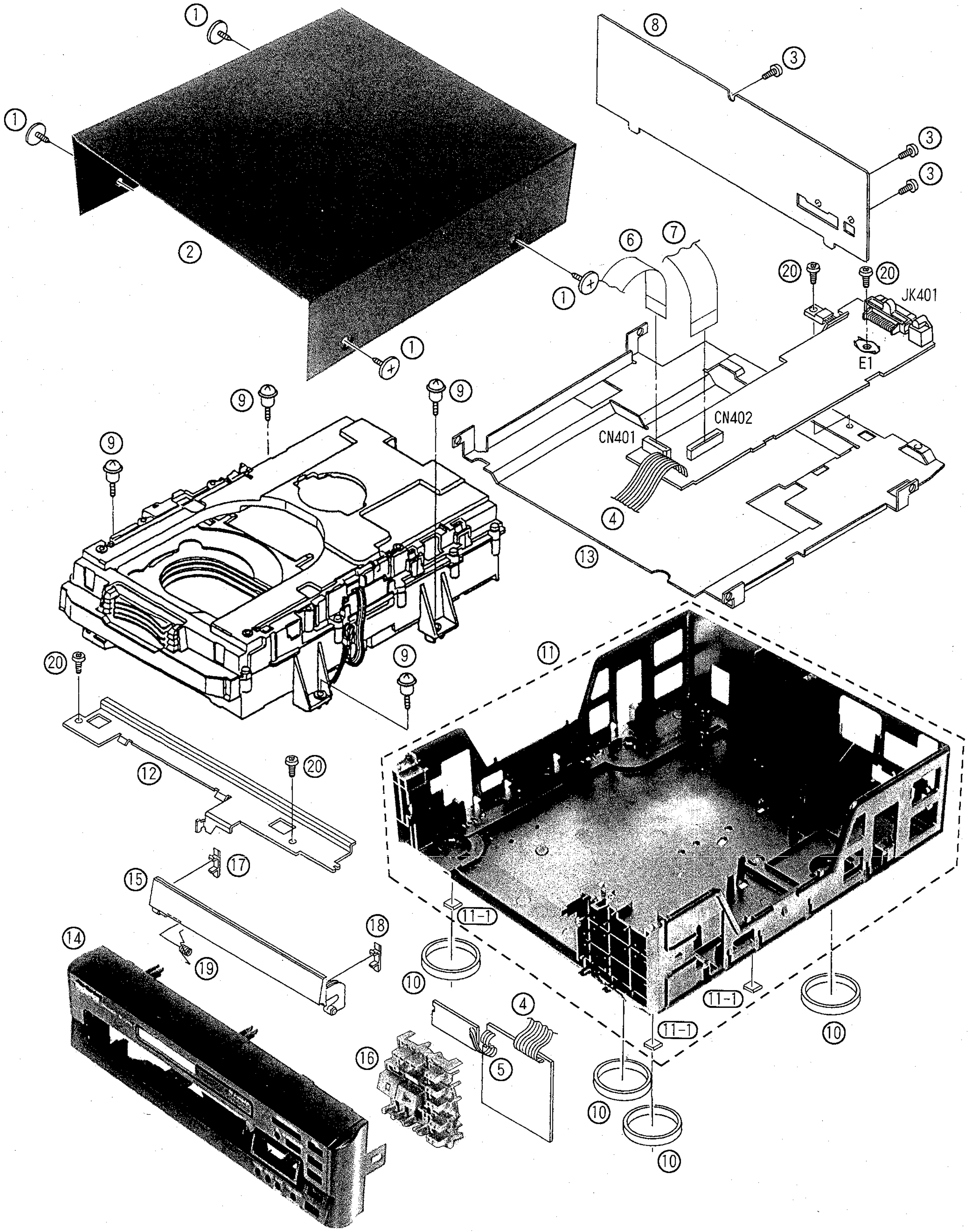
| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| | | |
| | | RESISTORS |
| | | |
| R2 | ERDS2TJ471 | 1/4W 470 |
| R3 | ERDS2TJ223 | 1/4W 22K |
| R4 | ERDS2TJ101 | 1/4W 100 |
| R5 | ERDS2TJ102 | 1/4W 1K |
| R6, 7 | ERDS2TJ271 | 1/4W 270 |
| R401 | ERDS2TJ105T | 1/4W 1M |
| R402 | ERDS2TJ102 | 1/4W 1K |
| R403 | ERDS2TJ104 | 1/4W 100K |
| R404 | ERDS2TJ471 | 1/4W 470 |
| R405 | ERDS2TJ101 | 1/4W 100 |
| R406 | ERDS2TJ471 | 1/4W 470 |
| R407 | ERDS2TJ123 | 1/4W 12K |
| R408-413 | ERDS2TJ103 | 1/4W 10K |
| R414 | ERDS2TJ471 | 1/4W 470 |
| R415-422 | ERDS2TJ103 | 1/4W 10K |
| R423-425 | ERDS2TJ101 | 1/4W 100 |
| R426 | ERDS2TJ102 | 1/4W 1K |
| R429 | ERDS2TJ103 | 1/4W 10K |
| R432 | ERDS2TJ123 | 1/4W 12K |
| R433 | ERDS2TJ103 | 1/4W 10K |
| R434 | ERDS2TJ102 | 1/4W 1K |
| R435 | ERDS2TJ101 | 1/4W 100 |
| R436, 437 | ERDS2TJ472 | 1/4W 4.7K |
| R438 | ERDS2TJ102 | 1/4W 1K |
| R439 | ERDS2TJ123 | 1/4W 12K |
| R440 | ERDS2TJ473 | 1/4W 47K |
| R441 | ERDS2TJ472 | 1/4W 4.7K |
| R442 | ERDS2TJ332 | 1/4W 3.3K |
| R443, 444 | ERDS2TJ472 | 1/4W 4.7K |
| R445 | ERDS2TJ102 | 1/4W 1K |
| R446 | ERDS2TJ472 | 1/4W 4.7K |
| R447, 448 | ERDS2TJ221 | 1/4W 220 |
| R449, 450 | ERDS2TJ473 | 1/4W 47K |
| R452 | ERDS2TJ103 | 1/4W 10K |
| R453 | ERDS2TJ473 | 1/4W 47K |
| R454 | ERDS2TJ102 | 1/4W 1K |
| R455, 456 | ERDS2TJ471 | 1/4W 470 |
| R457 | ERDS2TJ473 | 1/4W 47K |
| R601 | ERDS2TJ104 | 1/4W 100K |
| R602-604 | ERDS2TJ101 | 1/4W 100 |
| R605-610 | ERDS2TJ271 | 1/4W 270 |
| R611 | ERDS2TJ223 | 1/4W 22K |
| R612 | ERDS2TJ123 | 1/4W 12K |
| R613 | ERDS2TJ682T | 1/4W 6.8K |
| R614 | ERDS2TJ472 | 1/4W 4.7K |
| R615 | ERDS2TJ123 | 1/4W 12K |
| R616 | ERDS2TJ682T | 1/4W 6.8K |
| R617 | ERDS2TJ472 | 1/4W 4.7K |
| R618 | ERDS2TJ332 | 1/4W 3.3K |
| R619 | ERDS2TJ222 | 1/4W 2.2K |
| R620 | ERDS2TJ182 | 1/4W 1.8K |
| R621 | ERDS2TJ152 | 1/4W 1.5K |
| R622 | ERDS2TJ122 | 1/4W 1.2K |
| R623 | ERDS2TJ102 | 1/4W 1K |
| R624 | ERDS2TJ821 | 1/4W 820 |
| R625, 626 | ERDS2TJ221 | 1/4W 220 |
| R801, 802 | ERDS2TJ102 | 1/4W 1K |
| R803, 804 | ERDS2TJ104 | 1/4W 100K |
| R805-808 | ERDS2TJ223 | 1/4W 22K |
| R809, 810 | ERDS2TJ273 | 1/4W 27K |
| R811, 812 | ERDS2TJ332 | 1/4W 3.3K |
| R815, 816 | ERDS2TJ101 | 1/4W 100 |
| | | |
| | | CAPACITORS |
| | | |
| C1 ⚠ | ECA1CM222B | 16V 2200U |
| C2, 3 | ECBT1E103ZF | 25V 0.01U |
| C4 | ECBT1H102KB5 | 50V 1000P |
| C5 | RCE1CKA470BG | 16V 47U |
| C8 | ECA1EM101B | 25V 100U |
| C401 | RCE1HKA3R3BG | 50V 3.3U |
| C402, 403 | ECBT1H102KB5 | 50V 1000P |
| C404, 405 | ECBT1E103ZF | 25V 0.01U |
| C406 | RCE0JKA221BV | 6.3V 220U |
| C407 | ECEA1AKA221B | 10V 220U |
| C408 | ECBT1H101KB5 | 50V 100P |
| C409 | ECBT1E103ZF | 25V 0.01U |
| C410 | RCE0JKA470BG | 6.3V 47U |
| C411 | ECBT1H104ZF5 | 50V 0.1U |
| C413, 414 | ECBT1H101KB5 | 50V 100P |
| C415 | RCE0JKA470BG | 6.3V 47U |
| C416, 417 | ECBT1H102KB5 | 50V 1000P |
| C601 | ECBT1E103ZF | 25V 0.01U |
| C602 | ECEA1HKA010B | 50V 1U |
| C603-605 | ECBT1H101KB5 | 50V 100P |
| C801, 802 | ECBT1H102KB5 | 50V 1000P |
| C803, 804 | ECBT1H331KB5 | 50V 330P |
| C805, 806 | ECBT1H121KB5 | 50V 120P |
| C807, 808 | RCE0JKA470BG | 6.3V 47U |
| C809, 810 | ECEA1AKA220B | 10V 22U |
| C811, 812 | ECBT1H102KB5 | 50V 1000P |
| | | |
| | | < LOADING P.C.B. > |
| | | CAPACITORS |
| | | |
| C1 | ECA1AKF820E | 10V 82U |
| | | |
| | | < SERVO P.C.B > |
| | | RESISTORS |
| | | |
| R701 | ERJ6GEYJ4R7V | 1/10W 4.7 |
| R703 | ERJ6GEYJ823 | 1/10W 82K |
| R704 | ERJ6GEYJ102A | 1/10W 1K |
| R705 | ERJ6GEYJ103V | 1/10W 10K |
| R706 | ERJ6GEYJ102A | 1/10W 1K |
| R707 | ERJ6GEYJ474V | 1/10W 470K |
| R708 | ERJ6GEYJ154V | 1/10W 150K |
| R709 | ERJ6GEYJ683V | 1/10W 68K |
| R711 | ERJ6GEYJ154V | 1/10W 150K |
| R712 | ERJ6GEYJ221V | 1/10W 220 |
| R714 | ERJ6GEYJ121V | 1/10W 120 |
| R717, 718 | ERJ6GEYJ102A | 1/10W 1K |
| R720 | ERJ6GEY0R00A | 1/10W 0.00 |
| R721 | ERJ6GEYJ101V | 1/10W 100 |
| R722 | ERJ6GEYJ563V | 1/10W 56K |
| R723 | ERJ6GEYJ182V | 1/10W 1.8K |
| R724 | ERJ6GEYJ333V | 1/10W 33K |
| R725 | ERJ6GEYJ472V | 1/10W 4.7K |
| R726 | ERJ6GEYJ473V | 1/10W 47K |
| R727 | ERJ6GEYJ822V | 1/10W 8.2K |
| R728 | ERJ6GEYJ103V | 1/10W 10K |
| R731 | ERJ6GEYJ822V | 1/10W 8.2K |
| R735, 736 | ERJ6GEYJ101V | 1/10W 100 |
| R744 | ERJ6GEYJ103V | 1/10W 10K |
| R745 | ERJ6GEYJ155V | 1/10W 1.5M |
| R748 | ERJ6GEYJ182V | 1/10W 1.8K |
| R749 | ERJ6GEYJ682V | 1/10W 6.8K |
| R750, 751 | ERJ6GEYJ473V | 1/10W 47K |
| R752 | ERJ8GEYJ220V | 1/8W 22 |
| R770, 771 | ERJ6GEYJ155V | 1/10W 1.5M |
| R772 | ERJ6GEYJ273V | 1/10W 27K |
| | | |
| | | CHIP JUMPERS |
| | | |
| RJ701-709 | ERJ8GEY0R00A | CHIP JUMPER |
| RJ714-717 | ERJ8GEY0R00A | CHIP JUMPER |
| RJ721-731 | ERJ6GEY0R00A | CHIP JUMPER |
| | | |
| | | CAPACITORS |
| | | |
| C701 | ECEA0JKA330I | 6.3V 33U |
| C702 | ECUZNE104MBN | 25V 0.1U |
| C703 | ECEA0JKA101I | 6.3V 100U |
| C704, 705 | ECUZNE104MBN | 25V 0.1U |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C706 | ECUV1H272KBN | 50V 2700P |
| C707 | ECUV1E273KBN | 25V 0.027U |
| C708 | ECUE1H472KBN | 50V 4700P |
| C709 | ECUE1C473KBN | 16V 0.047U |
| C710 | ECUV1H182KBN | 50V 1800P |
| C711, 712 | ECUWNE104ZFN | 25V 0.1U |
| C713 | ECUV1C104MBM | 16V 0.1U |
| C714 | ECEA0JKA101I | 6.3V 100U |
| C716 | ECUE1H561KBN | 50V 560P |
| C717 | ECUWNE104ZFN | 25V 0.1U |
| C718 | ECUVNC224KBN | 16V 0.22U |
| C721 | ECUV1H100DCN | 50V 10P |
| C722 | ECUV1H150JCN | 50V 15P |
| C723 | ECEA1AKA221I | 10V 220U |
| C724 | ECUV1C104MBM | 16V 0.1U |
| C725, 726 | ECUE1H102KBN | 50V 1000P |
| C727, 728 | ECEA1HPK010I | 50V 1U |
| C730 | ECUWNE104ZFN | 25V 0.1U |
| C731, 732 | ECEA0JKA221I | 6.3V 220U |
| C733 | ECUZNE104MBN | 25V 0.1U |
| C734 | ECEA1AKA221I | 10V 220U |
| C735-737 | ECUWNE104ZFN | 25V 0.1U |
| C738 | ECUV1C154KBN | 16V 0.15U |
| C742 | ECUV1E273KBN | 25V 0.027U |
| C743 | ECUWNE104ZFN | 25V 0.1U |
| C744 | ECUE1E822KBN | 25V 8200P |
| C745 | ECUE1H102KBN | 50V 1000P |
| C747 | ECUE1H222KBN | 50V 2200P |
| C748 | ECUV1H471KBM | 50V 470P |
| C749 | ECUZNE104MBN | 25V 0.1U |
| C750 | ECUV1C104MBM | 16V 0.1U |
| C751 | ECUZNE104MBN | 25V 0.1U |
| C752 | ECUE1H152KBN | 50V 1500P |
| C753 | ECUV1H471KBM | 50V 470P |
| C754 | ECUE1H471KBN | 50V 470P |

## REPLACEMENT PARTS LIST

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | CABINET AND CHASSIS | |
| | | | |
| 1 | RHD30007-K1 | SCREW | |
| 2 | RKM0222-3K | CABINET | |
| 3 | XTBS3+8JFZ1 | SCREW | |
| 4 | RWJ1809125KK | FLAT CABLE(9P) (W401) | |
| 5 | RWJ1803055KK | FLAT CABLE(3P) (W601) | |
| 6 | REZ0555 | FFC(14P) | |
| 7 | REZ0765 | FFC(23P) | |
| 8 | RGR0217B-C | REAR PANEL | |
| 9 | RHD30065 | SCREW | |
| 10 | RKA0068-N | FOOT RING | |
| 11 | RFKJLCA7-N | FRAME ASS'Y | |
| 11-1 | SHG1654 | FOOT RUBBER | |
| 12 | RMA0931 | REINFORCING PLATE | |
| 13 | RSC0425 | SHIELD PLATE | |
| 14 | RFKGLCA10E-K | FRONT PANEL ASS'Y | |
| 15 | RFKNLCA10EBK | TRAY DOOR ASS'Y | |
| 16 | RFKNLCA10ECK | BUTTON BLOCK ASS'Y | |
| 17 | RKQ0197-X | SLIDE PIECE(L) | |
| 18 | RKQ0204-X | SLIDE PIECE(R) | |
| 19 | RMB0472 | DOOR SPRING | |
| 20 | XTB3+8JFZ | SCREW | |

# CABINET PARTS LOCATION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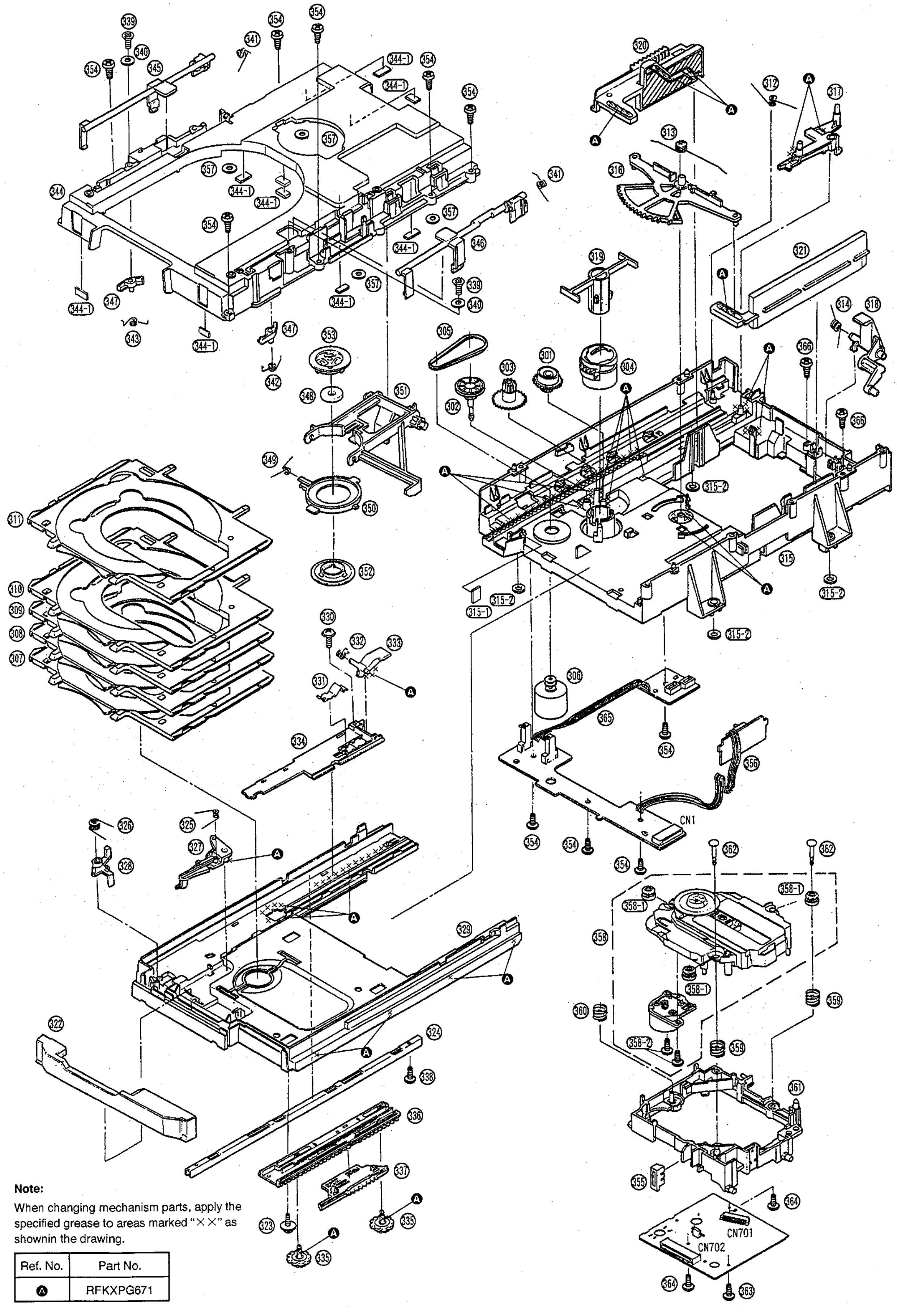
## LOADING MECHANISM PARTS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CN701
CN702
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363

**Note:**
When changing mechanism parts, apply the specified grease to areas marked "× ×" as shownin the drawing.

| Ref. No. | Part No. |
|---|---|
| A | RFKXPG671 |

# ■REPLACEMENT PARTS LIST

**Notes:** * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* Warning: This product uses a laser diode. Refer to caution statements on page 2.
* ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | LOADING MECHANISM | |
| | | | |
| 301 | RDG0309 | INTERMEDIATE GEAR | |
| 302 | RDG0310 | PULLEY GEAR | |
| 303 | RDG0311 | DRIVE GEAR | |
| 304 | RDG0313 | UP/DOWN GEAR | |
| 305 | RDV0036 | BELT | |
| 306 | RFKPDS790PK1 | MOTOR ASS'Y | |
| 307 | RGQ0170-K | DISC TRAY(1) | |
| 308 | RGQ0171-K | DISC TRAY(2) | |
| 309 | RGQ0172-K | DISC TRAY(3) | |
| 310 | RGQ0173-K | DISC TRAY(4) | |
| 311 | RGQ0174-K | DISC TRAY(5) | |
| 312 | RME0170 | LOCK LEVER SPRING | |
| 313 | RME0179 | ASSIST SPRING | |
| 314 | RME0180 | TRAY HOLD SPRING | |
| 315 | RFKNACH430GC | MECHANISM BASE ASS'Y | |
| 315-1 | RMF0221 | FELT | |
| 315-2 | RMG0402-K | RUBBER WASHER | |
| 316 | RML0379 | CONVERSION LEVER | |
| 317 | RML0380 | LOCK LEVER | |
| 318 | RML0383 | TRAY HOLD LEVER | |
| 319 | RML0385 | UP/DOWN LEVER | |
| 320 | RMM0139 | SLIDE PLATE(1) | |
| 321 | RMM0141 | SLIDE PLATE(2) | |
| 322 | RGQ0175-K | TRAY ORNAMENT | |
| 323 | RHD20010 | SCREW | |
| 324 | RMA0868 | REINFORCING ANGLE | |
| 325 | RME0171 | BASE LOCK LEVER SPRING | |
| 326 | RME0172 | CARRIER LOCK LEVER SPRING | |
| 327 | RML0377 | BASE LOCK LEVER | |
| 328 | RML0378 | CARRIER LOCK LEVER | |
| 329 | RMR0884-K | TRAY BASE | |
| 330 | RHD20009-1 | SCREW | |
| 331 | RMC0274 | TRAY HOOK SPRING | |
| 332 | RME0173 | CARRIER ARM SPRING | |
| 333 | RML0376-1 | CARRIER ARM | |
| 334 | RMM0137 | CARRIER | |
| 335 | RDG0312 | SPEED GEAR | |
| 336 | RMM0134 | DRIVE RACK | |
| 337 | RMM0135 | CUSHION RACK | |
| 338 | XTN2+6F | SCREW | |
| 339 | XTS3+8J | SCREW | |
| 340 | XWE4E10 | WASHER | |
| 341 | RME0178 | HOLD SPRING | |
| 342 | RME0181 | LIFT PREVENTION SPRING(1) | |
| 343 | RME0182 | LIFT PREVENTION SPRING(2) | |
| 344 | RFKNLCA10EAK | MECHANISM COVER ASS'Y | |
| 344-1 | RMF0221 | FELT | |
| 345 | RML0381 | HOLD NAIL(1) | |
| 346 | RML0382 | HOLD NAIL(2) | |
| 347 | RML0384 | LIFT PREVENTION LEVER | |
| 348 | RHM245ZA | MAGNET | |
| 349 | RME0174 | CLAMP LEVER SPRING | |
| 350 | RFKNACH430GE | CLAMP BASE ASS'Y | |
| 351 | RML0388-1 | CLAMP LEVER | |
| 352 | RMR0761-W | CLAMPER | |
| 353 | RMR0899-K | FIXED PLATE | |
| 354 | XTB3+10J | SCREW | |
| 355 | RMR0975-W | TRAVERSE CAP | |
| 356 | REZ0793 | FLAT CABLE(3P)(W1) | |
| 357 | RMG0430-Q | RUBBER TUBE | |
| 358 | RAE0150Z | TRAVERSE DECK ASS'Y | |
| 358-1 | SHGD113-1 | FLOATING RUBBER | |
| 358-2 | SNSD38 | SCREW | |
| 359 | RME0109 | FLOATING SPRING(1) | |
| 360 | RME0142 | FLOATING SPRING(2) | |
| 361 | RMK0293 | TRAVERSE CHASSIS | |
| 362 | RMS0123-1 | TRAVERSE FIXED PIN | |
| 363 | XTN2+6G | SCREW | |
| 364 | XTV2+6G | SCREW | |
| 365 | REZ0792 | FLAT CABLE(3P)(W2) | |
| 366 | XTWS3+8T | SCREW | |
| | | | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC1 | LM2940T5 | REGULATOR | ⚠ |
| IC401 | LC66538A4G99 | SYSTEM CONTROL | |
| IC402 | TOTX178 | TRANSMISSON MODULE | |
| IC601 | NJU3713GTE1 | LED DRIVE | |
| IC801 | BA4558FHTT1 | L.P.F. | |
| | | | |
| | | TRANSISTOR(S) | |
| | | | |
| Q1 | 2SB1548PQAU | TRANSISTOR | ⚠ |
| Q2 | 2SC3311AIQST | TRANSISTOR | ⚠ |
| Q401 | DTC114YSTP | TRANSISTOR | |
| Q402-404 | 2SC3311AIQST | TRANSISTOR | |
| Q405 | 2SA1309A-R | TRANSISTOR | |
| | | | |
| | | DIODE(S) | |
| | | | |
| D1, 2 | RL1N4003N02 | DIODE | ⚠ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D3,4 | MA165 | DIODE | |
| D5 | MA4075MTA | DIODE | ⚠ |
| D6 | RL1N4003N02 | DIODE | |
| D7 | MA4051MTA | DIODE | |
| D401 | MA165 | DIODE | |
| D601-606 | SPR505MDTT | L. E. D. | |
| D607-610 | LNJ401NPYJA | L. E. D. | |
| D617 | MA165 | DIODE | |
| | | | |
| | | COIL(S) | |
| | | | |
| L1,2 | BL02RN2R65T2 | COIL | ⚠ |
| L401 | RLQA100JT-Y | COIL | |
| L402 | BL02RN2R65T2 | COIL | |
| | | | |
| | | OSCILLATOR(S) | |
| | | | |
| X401 | EF0EC4234T3 | OSCILLATOR(4.23MHz) | |
| | | | |
| | | SWITCH(ES) | |
| | | | |
| S601 | EVQ21405R | DISC5 | |
| S602 | EVQ21405R | DISC4 | |
| S603 | EVQ21405R | DISC3 | |
| S604 | EVQ21405R | DISC2 | |
| S605 | EVQ21405R | DISC1 | |
| S606 | EVQ21405R | DISC CHECK | |
| S607 | EVQ21405R | REPEAT | |
| S608 | EVQ21405R | AI EDIT | |
| S609 | EVQ21405R | RANDOM | |
| S610 | EVQ21405R | R. SKIP/SEARCH | |
| S611 | EVQ21405R | STOP | |
| S612 | EVQ21405R | PLAY | |
| S613 | EVQ21405R | F. SKIP/SEARCH | |
| S614 | EVQ21405R | PAUSE | |
| S615 | EVQ21405R | OPEN/CLOSE | |
| | | | |
| | | CONNECTOR(S) | |
| | | | |
| CN401 | RJS1A6814 | CONNECTOR(14P) | |
| CN402 | RJS1A6823 | CONNECTOR(23P) | |
| JK401 | RJT065K19 | CONNECTOR(19P) | |
| | | | |
| | | EARTH PLATE(S) | |
| | | | |
| E1 | SNE1004-2 | EARTH PLATE | |
| | | | |
| | | < LOADING P.C.B. > | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC1 | BA6418N | MOTOR DRIVE | |
| | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | SWITCH(ES) | |
| | | | |
| S1 | RSH1A005 | STOCKER POSITION DET. | |
| S2 | RSH1A032-U | PLAY POSITION DET. | |
| S3 | RSH1A032-U | UP POSITION DET. | |
| S4 | RSH1A005 | TRAY OPEN DET. | |
| S5 | RSH1A032-U | DISC NUMBER DET. | |
| | | | |
| | | CONNECTOR(S) | |
| | | | |
| CN1 | RJS1A6714 | CONNECTOR(14P) | |
| | | | |
| | | <SERVO P.C.B> | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC701 | AN8835SBE1 | SERVO AMP | |
| IC702 | MN662740RM1 | SERVO PROCESSOR | |
| IC703 | AN8389SE1 | COIL & MOTOR DRIVE | |
| | | | |
| | | TRANSISTOR(S) | |
| | | | |
| Q701 | 2SB709S | TRANSISTOR | |
| | | | |
| | | OSCILLATOR(S) | |
| | | | |
| X701 | RSXB16M9J02T | OSCILLATOR(16.9344MHz) | |
| | | | |
| | | SWITCH(ES) | |
| | | | |
| S701 | RSM0006-P | REST DETECTOR | |
| | | | |
| | | CONNECTOR(S) AND SOCKET(S) | |
| | | | |
| CN701 | RJU035T016-1 | SOCKET(16P) | |
| CN702 | RJS1A6723-1Q | CONNECTOR(23P) | |
| | | | |
| | | <GREASE OR JIG/TOOL> | |
| | | TEST DISC | |
| | | | |
| SA1 | SZZP1054C | PLAYABILITY TEST DISC | |
| | | | |
| | | GREASE | |
| | | | |
| SA2 | RFKXPG671 | MOLYCOAT GREASE PG671 | |

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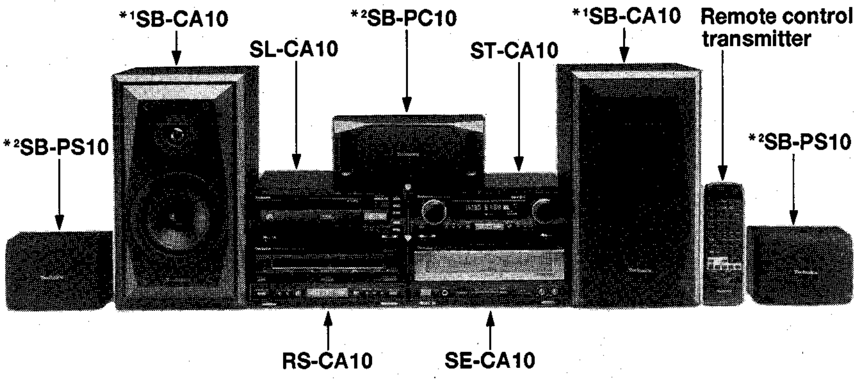
ORDER NO. AD9512270C8

# Service Manual

Tuner

## ST-CA10

Tuner



**Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.**

### Colour

(K)...Black Type

### Area

| Suffix for Model No. | Area | Colour |
|---|---|---|
| (E) | Europe. | (K) |
| (EB) | Great Britain. | |
| (EG) | Germany and Italy. | |
| (GC) | Asia, Latin America, Middle Near east and Africa. | |

**System: SC-CA10**

## ■SPECIFICATIONS

### ■Pre-amplifier section

| | |
|---|---|
| **Input sensitivity/impedance** | |
| **PHONO** | 2.5 mV/ 47 kΩ |
| **EXTERNAL, VCR, VDP** | 150 mV/15 kΩ |
| **Output level** | |
| **EXTERNAL/ VCR REC OUT** | 150 mV/1.5 kΩ |
| **Frequency response** | |
| **PHONO** | 30 Hz −15 kHz/+1.5 to −2.0 dB |
| **EXTERNAL, VCR, VDP** | 20 Hz—40 kHz |
| **S/N** | |
| **PHONO** | DIN 75 dB (77 dB, IHF) |
| **EXTERNAL, VCR, VDP** | DIN 83 dB (85 dB, IHF) |

### ■DOLBY PRO LOGIC section

| | |
|---|---|
| **PRO LOGIC mode** | SURROUND, 3 STEREO |
| **CENTER mode** | NORMAL, WIDE, PHANTOM |
| **DELAY TIME** | 15, 20, 25, 30 ms. |

### ■FM tuner section

| | |
|---|---|
| **Frequency range** | 87.50—108.00 MHz (0.05 MHz steps) |
| **Sensitivity** | 1.8 μV (IHF usable) |
| **S/N 26 dB** | 1.5 μV |
| **S/N** | |
| **MONO** | 70 dB (75 dB, IHF) |
| **Stereo separation** | |
| **1kHz** | 35 dB |
| **Antenna terminal(s)** | 75Ω (unbalance) |

### ■AM tuner section

| | |
|---|---|
| **Frequency range** | |
| **[For (E, EB) areas]** | |
| **MW** | 522—1611 kHz (9 kHz steps)<br>530—1620 kHz (10 kHz steps) |
| **LW** | 144—288 kHz (9 kHz steps) |
| **[For (EG, GC) areas]** | |
| **AM** | 522—1611 kHz (9 kHz steps)<br>530—1620 kHz (10 kHz steps) |
| **Sensitivity (S/N 20 dB)** | |
| **[For (E, EB) areas]** | |
| **MW** | 500 μV/m |
| **LW** | 50 μ/V |
| **[For (EG, GC) areas]** | |
| **AM** | 500 μV/m |

### ■Timer section

| | |
|---|---|
| **Clock** | Quartz-lock type |
| **Function** | 24-hour programmable<br>Play timer (1 time), Rec timer (1 time)<br>Sleep (120 min., 30 min. intervals) |
| **Setting** | 1 minute—23 hours 59 minutes (1 min. intervals) |

### ■General

| | |
|---|---|
| **Dimensions (W×H×D)** | 280×89×291 mm |
| **Weight** | 1.75 kg |

**Note:**
Specifications are subject to change without notice.
Weight and dimensions are approximate.

| System | Tuner | CD changer | Amplifier | Cassette deck | Speakers |
|---|---|---|---|---|---|
| SC-CA10 | ST-CA10 | SL-CA10 | SE-CA10 | RS-CA10 | *1 SB-CA10<br>*2 SB-PT10<br>(SB-PC10+SB-PS10) |

*1 Made in PAES
*2 For (E, EB, EG) areas....Made in PAES
For (GC, GN) areas....Made in NABEL

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

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| TO SUPPLY POWER SOURCE | 5 |
| MEASUREMENTS AND ADJUSTMENTS | 6 |
| REPLACEMENT OF THE FOOT | 6 |
| SCHEMATIC DIAGRAM | 7~26 |
| PRINTED CIRCUIT BOARD DIAGRAM | 27~30 |
| WIRING CONNECTION DIAGRAM | 31 |
| BLOCK DIAGRAM | 32~37 |
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| REPLACEMENT PARTS LIST | 39~42 |
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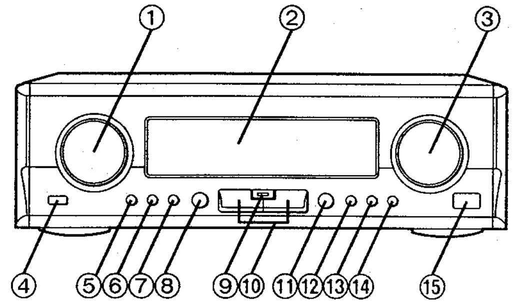
| CABINET PARTS LOCATION | 43 |

**NOTE:**
**Refer to the service manual for Model No. SE-CA10 (ORDER No. AD9512272C8) for information on "ACCESSORIES", "INSTALLATION ", "CONNECTIONS" and "PACKAGING".**

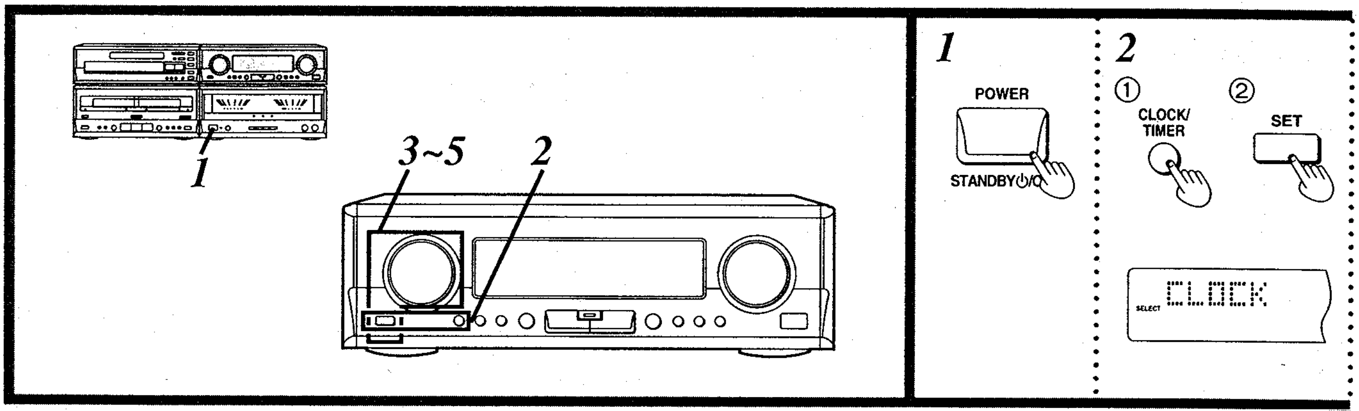
# LOCATION OF CONTROLS



**① JOG control (JOG)**
**② Display**
**③ Volume control (VOLUME)**
**④ Set button (SET)**
**⑤ Clock/timer button (CLOCK/TIMER)**
**⑥ Record timer button (◷ REC)**
**⑦ Play timer button (◷ PLAY)**
**⑧ Tuning mode select button (TUNING MODE)**
**⑨ Tuner indicator (TUNER)**
**⑩ Band select button (FM, LW/MW)**
**⑪ Source input select button (INPUT SELECTOR)**
**⑫ Display mode select button (DISP MODE)**
**⑬ PTY select button (PTY SELECT)**
**⑭ PTY search button (PTY SEARCH)**
**⑮ Remote control signal sensor (SENSOR)**

**Note:** ⑫, ⑬, ⑭: For [E, EG] areas.

# SETTING THE TIME



This is a 24-hours display clock.
These instructions explain how to set the timer for 16:25 (4:25 p.m.) on Wednesday.

*1* **Switch on the power.**
The very first time you turn ON the power or whenever you turn it ON after having unplugged and plugged the stereo in again, you will hear the sound of the tray mechanism. There is nothing wrong with your CD changer. This happens because of initial settings.

*2* **① Press CLOCK/TIMER to show "CLOCK".**
**Within 10 seconds:**
**② Press SET.**

*3* **① Turn JOG to select the day.**
**② Press SET.**

*4* **① Turn JOG to select the hour.**
**② Press SET.**

*5* **① Turn JOG to select the minutes.**
**② Press SET to finish setting the time.**

The display will return to the previous display after about 3 seconds.

---

### When "SUN 0:00" flashes:

It flashes when you connect the AC power supply cord for the first time or if there has been a power failure.
If this happens, reset the time.

### If the minutes setting has gone wrong:

1. Press CLOCK/TIMER.
2. Press SET 3 times.
3. Turn JOG to set the minute, and then press SET.

### To display the clock again:

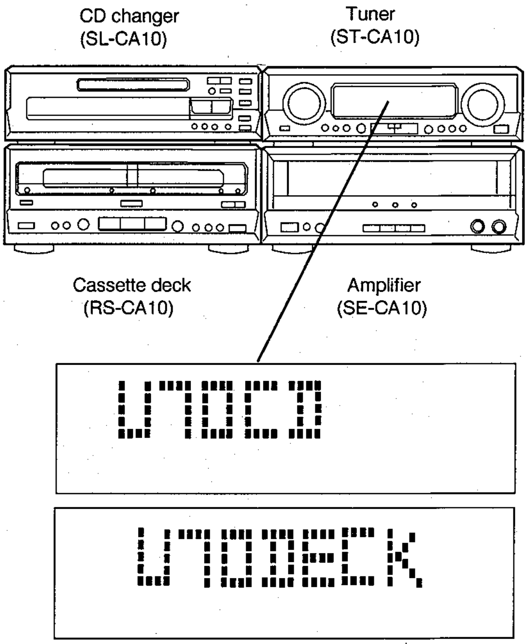
Press CLOCK/TIMER.
The clock display will appear for about 10 seconds.

### For your reference:

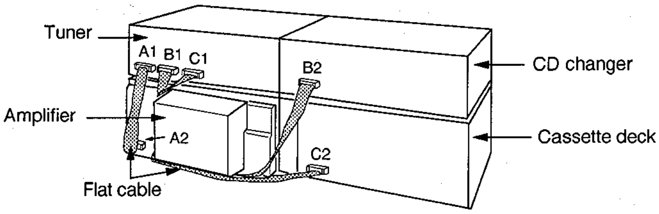
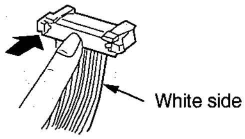
When you turn OFF the power from the POWER button, the stereo goes on standby and the STANDBY lamp lights up.

# ■ABOUT THE SELF-DIAGNOSTIC MODE

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically displays a code indicating the nature of the malfunctions. Use this self-diagnostic function when servicing the unit.

| Display method | Display location |
|---|---|
| **To display the malfunction code**<br>U70 CD:<br>U70 DECK:.... Automatically displays on the tuner when a malfunction occurs.<br>F61 ................ Automatically displays on the tuner when a malfunction occurs.<br>**To return to the normal display**<br>**1. For U70 CD/U70 DECK:**<br>● Press an any operation button on the tuner.<br>● To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again.<br>**2. For F61:**<br>● If "F61" is displayed, the power will automatically be switched off and the standby indicator will light up.<br>● "F61" will be displayed for 3 seconds, and then the clock will be displayed.<br>● To re-display the code, switch the power on. "F61" will be redisplayed, and then after 3 seconds the clock will be displayed and the power will automatically switch off. |  CD changer (SL-CA10)<br>Tuner (ST-CA10)<br>Cassette deck (RS-CA10)<br>Amplifier (SE-CA10)<br>U70CD<br>U70DECK |

**Display contents**

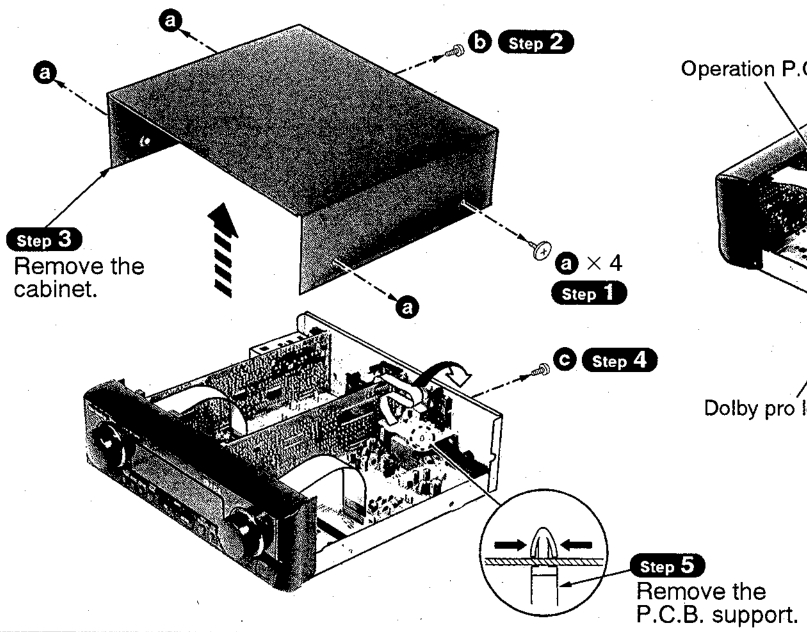
| Display code | Problem or condition | Correction procedure |
|---|---|---|
| **U70 CD**<br>**U70 DECK**<br>(displayed automatically) | A bus-line communications error has occurred as a result of the flat cables being inserted incorrectly, thus preventing the system from operating.<br>1. If "U70" is displayed on the tuner, the Cassette deck or CD changer cannot be operated by remote control. |  Tuner<br>A1<br>B1<br>C1<br>B2<br>CD changer<br>Amplifier<br>A2<br>Cassette deck<br>C2<br>Flat cable<br>1. To check for correct insertion of the flat cables<br>①Match each connector with the color (black/ white) of the connection port and insert until you hear a click.<br>②Insert the flat cables at the back of the unit in the order indicated. Make sure the white side of the cable is on your right side.<br> <br>2. Breakage of flat cable (Check and replace as necessary.)<br>3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC.<br>**ST-CA10:**<br>IC901 (M38198MC064F)<br>**SL-CA10:**<br>IC401 (LC66538A4G99)<br>**RS-CA10:**<br>IC701 (M37471M4264F)<br>Check these IC's and replace as necessary. |
| **F61** | When the power switch is switched on, it automatically switches back off, making it impossible to switch power on. | ● Faulty amplifier (SE-CA10) output IC (IC501).<br>(When a DC voltage is applied to the speaker terminals.) |

# ■ Operation Check and Main Component Replacement Procedures

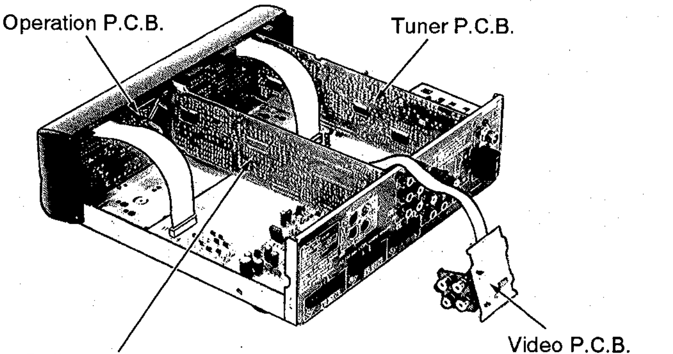
**NOTE**

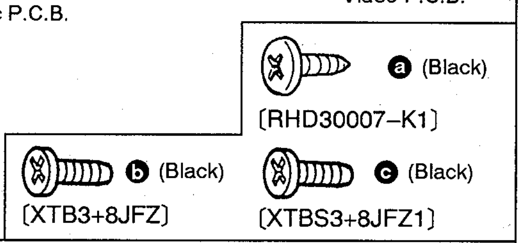
1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Illustrated screws are equivalent to actual size.**

## 1. Checking for the tuner P.C.B., dolby pro logic P.C.B., operation P.C.B. and video jack P.C.B.

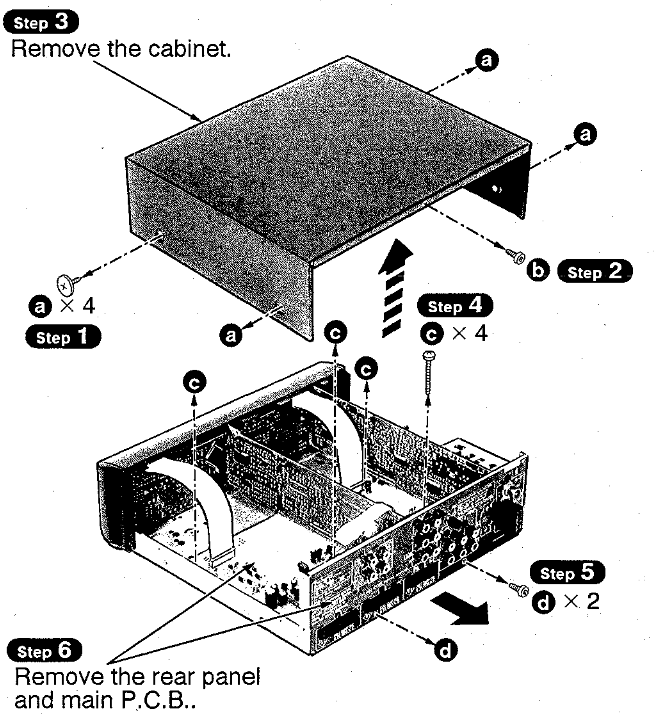

a
a
b Step 2
Step 3
Remove the cabinet.
a × 4
Step 1
a
c Step 4
Step 5
Remove the P.C.B. support.

- **Check the tuner P.C.B., dolby pro logic P.C.B., operation P.C.B. and video jack P.C.B. as shown below.**

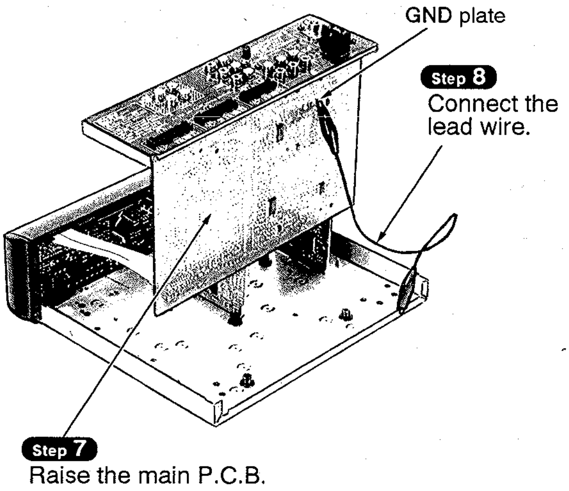

Operation P.C.B.
Tuner P.C.B.
Dolby pro logic P.C.B.
Video P.C.B.

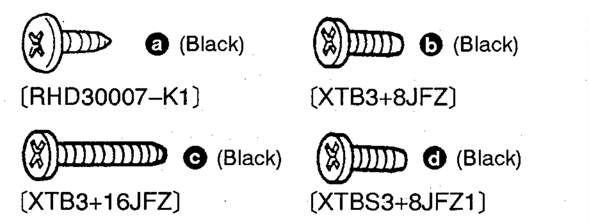

a (Black)
[RHD30007–K1]
b (Black)
[XTB3+8JFZ]
c (Black)
[XTBS3+8JFZ1]

## 2. Checking for the main P.C.B.


Step 3
Remove the cabinet.
a
a
b Step 2
a × 4
Step 1
a
c
c
Step 4
c × 4
c
Step 5
d × 2
d
Step 6
Remove the rear panel and main P.C.B..

- **Check the main P.C.B. as shown below.**


GND plate
Step 8
Connect the lead wire.
Step 7
Raise the main P.C.B.


a (Black)
[RHD30007–K1]
b (Black)
[XTB3+8JFZ]
c (Black)
[XTB3+16JFZ]
d (Black)
[XTBS3+8JFZ1]

# ■TO SUPPLY POWER SOURCE

**This unit ST-CA10 is designed to operate on power supplied from the Amplifier SE-CA10.**
**When operating the unit ST-CA10 alone for testing and servicing, without having power supplied from the Amplifier SE-CA10, use the following method.**

## Power Supply to Main Circuit

1. Short the section between the test points TP602 and TP610, and as well as the section between the test points A.GND (J611) and TP610.
2. Connect the 3V AC power to pin 1 of the indicator module FL901 and the GND terminal to pin 57 of the same FL901 module.
3. Apply 11V AC power to the section between the point TP601 (AC) and the point TP602 (CT) as well as the section between the point TP603 (AC) and the point TP602 (CT). This unit comes to stand-by mode.
4. Short the section between the jumper **J315** TP611 and the point D.GND of the jumper **J608** TP610 for a moment. The main circuit comes to power ON mode. (Whenever this operation is performed, power, ON/OFF mode is repeated.)

## Power Supply to Tuner Circuit

1. Apply power source to the main circuit.
2. Connect the DC +12V terminal to the jumper **J610** TP608, and the GND terminal to both the point T.GND of the jumper **J609** TP609 and the point D.GND of the jumper **J608** TP610 using the DC power supply tool.

**Note:** If the GND terminal of the DC power supply tool is connected to the point D.GND of the jumper **J608** TP610, an error occurs in measurement values for voltage and waveform.

## To Check Signals

Connect the oscilloscope or the speaker with the built-in amplifier to the EXTERNAL (OUT) terminals and check if the signals are outputting from this unit.

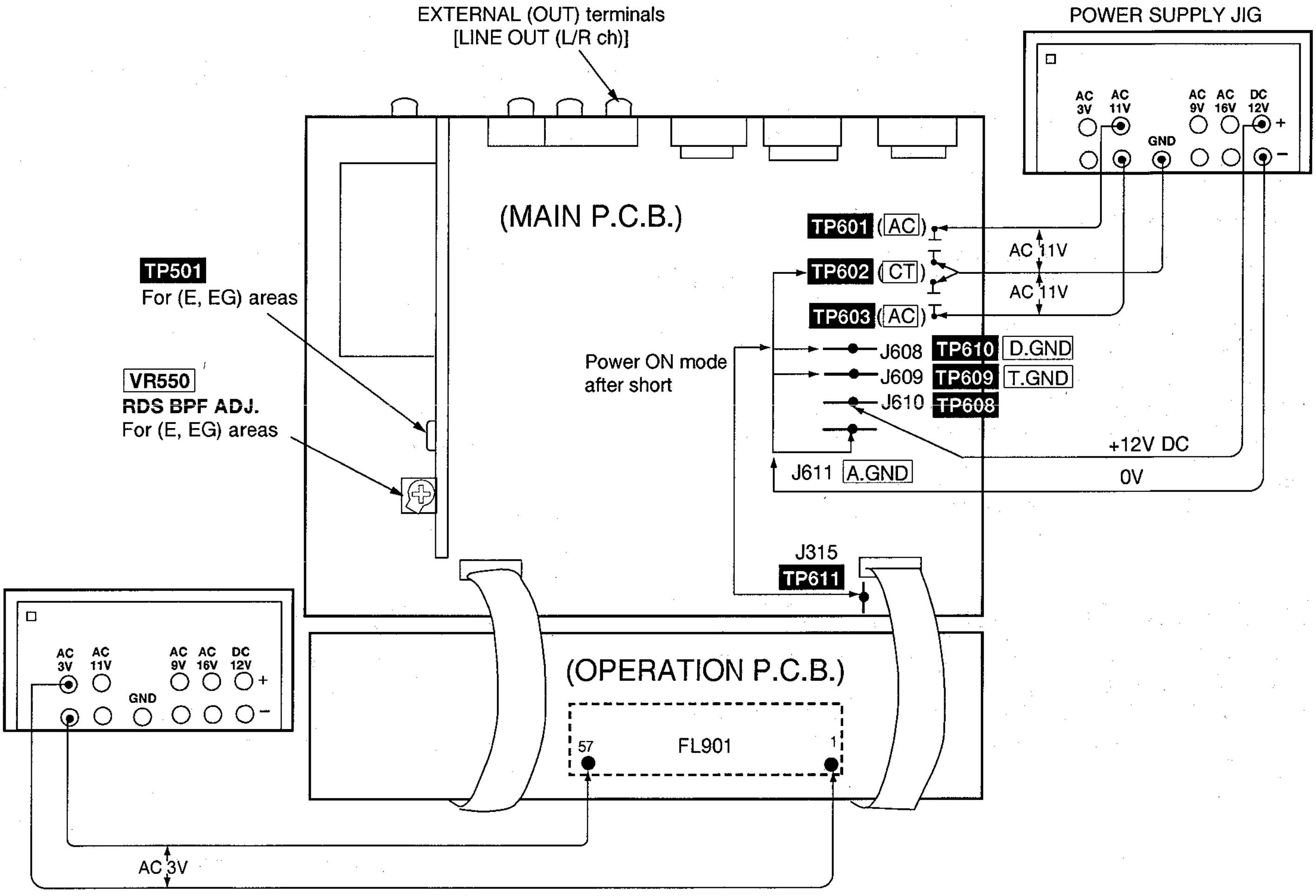

EXTERNAL (OUT) terminals
[LINE OUT (L/R ch)]
POWER SUPPLY JIG
AC 3V
AC 11V
AC 9V
AC 16V
DC 12V
GND
+
−
(MAIN P.C.B.)
TP601 (AC)
TP602 (CT)
TP603 (AC)
AC 11V
AC 11V
TP501
For (E, EG) areas
VR550
RDS BPF ADJ.
For (E, EG) areas
Power ON mode
after short
J608 TP610 D.GND
J609 TP609 T.GND
J610 TP608
+12V DC
0V
J611 A.GND
J315
TP611
(OPERATION P.C.B.)
57
FL901
1
AC 3V

Fig. 1

# MEASUREMENTS AND ADJUSTMENTS [For (E, EG) areas.]

## Measuring Instruments and Special Tools

- FM signal generator (FM-SG)
- RDS modulator
- AC electronic voltmeter (AC EVM)*
  (*Min. 0.3 mV measurable)
- 75Ω coaxial cable

## RDS (Radio Data System) BPF Adjustment

1. Test equipment connection is shown in Fig. 2.
2. Set the unit to "**FM**" mode.
3. Set the radio frequency display and signal generator to **100.10 MHz.**
4. Adjust **VR550** so that the TP501 output is maximized.

**FM Signal Generator Condition**

| | |
|---|---|
| Modulation | 100% |
| Modulation frequency | 1kHz |
| RDS modulation | 2.7% |
| Output level | 60dB |

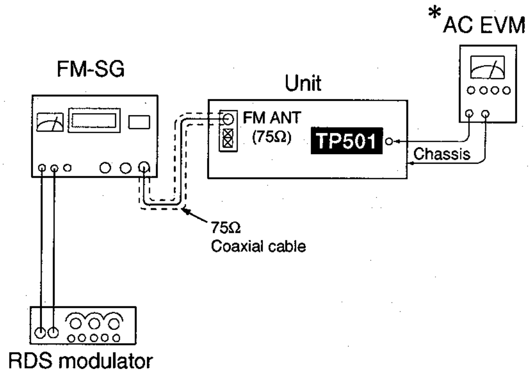

*AC EVM
FM-SG
Unit
FM ANT
(75Ω)
TP501
Chassis
75Ω
Coaxial cable
RDS modulator

**Fig. 2**

**Note:** * Use the voltmeter measurable up to 0.3 mV at the minimum.

**How to make simple adjustment without using a RDS modulator**

1. Tuner into a FM broadcasted with a RDS signal transmitted from a FM station whose electric field intensity is more than 50 dB.
2. Adjust **VR550** so that the TP501 output is maximized.

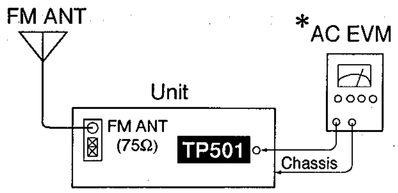

FM ANT
*AC EVM
Unit
FM ANT
(75Ω)
TP501
Chassis

**Fig. 3**

### What is RDS (Radio Data System)?

RDS is a multiplex broadcasting system which adds a variety of message signal to the audio signals of FM broadcasts.
This unit can utilize the following signals among the various RDS signals.

**RDS meeeages used by this unit**

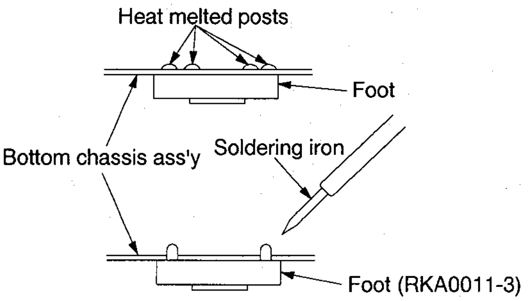
- **PS** (Program service name)
  Name of the broadcast station
- **PTY** (Program type)
  Identification signal for program types such as news and sport

Note

"PTY" may not be available in some areas.

# REPLACEMENT OF THE FOOT

1. Remove the 4 heat melted posts on the Bottom chassis ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0011-3) on the Bottom board ass'y melt the 4 posts with a soldering iron.


Heat melted posts
Foot
Bottom chassis ass'y
Soldering iron
Foot (RKA0011-3)

## ■SCHEMATIC DIAGRAM (Parts list on pages 39~46.)

- This schematic diagram may be modified at any time with development of new technology.

**A** **TUNER CIRCUIT** For (E) area ........ 8~10
**A** **TUNER CIRCUIT** For (EG) area ........ 11~13
**A** **TUNER CIRCUIT** For (EB) area ........ 14, 15
**A** **TUNER CIRCUIT** For (GC) area ........ 16, 17
**B** **OPERATION CIRCUIT** ........ 18, 19
**C** **MAIN CIRCUIT** ........ 20~23
**D** **DOLBY PROLOGIC CIRCUIT** ........ 24~26
**E** **VIDEO CIRCUIT** ........ 24

**Notes:**

- **S901**: FM switch (FM)
- **S902**: LW/MW select switch (LW/MW)... **For (E, EB) areas.**
  AM switch (AM)... **For (EG, GC) areas.**
- **S903**: Tuning mode select switch (TUNING MODE)
- **S904**: Play timer switch (◷ PLAY)
- **S905**: Record timer switch (◷ REC)
- **S906**: Clock/ timer switch (CLOCK/TIMER)
- **S907**: Set switch (SET)
- **S911**: Source input select switch (INPUT SELECTOR)
- **S912**: Display mode select switch (DISP MODE)... **For (E, EG) areas.**
- **S913**: PTY select switch (PTY SELECT)... **For (E, EG) areas.**
- **S914**: PTY search switch (PTY SEARCH)... **For (E,EG) areas.**
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between **TP602** and **TP610**, and between **TP610** and A. GND, and between **TP609** and A. GND are shorted.

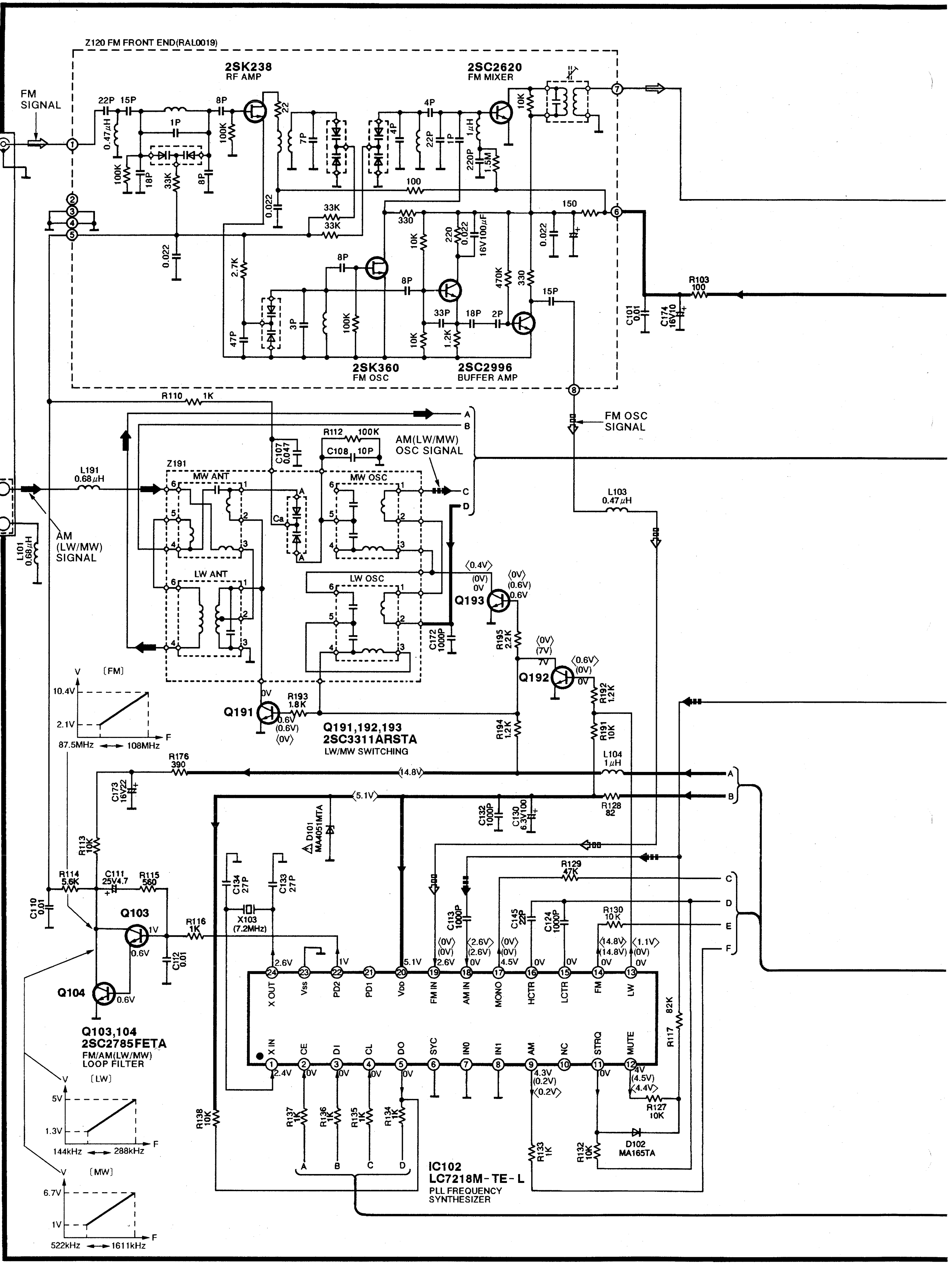
No mark: FM mode ( ): AM (MW) mode < >: AM (LW) mode

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

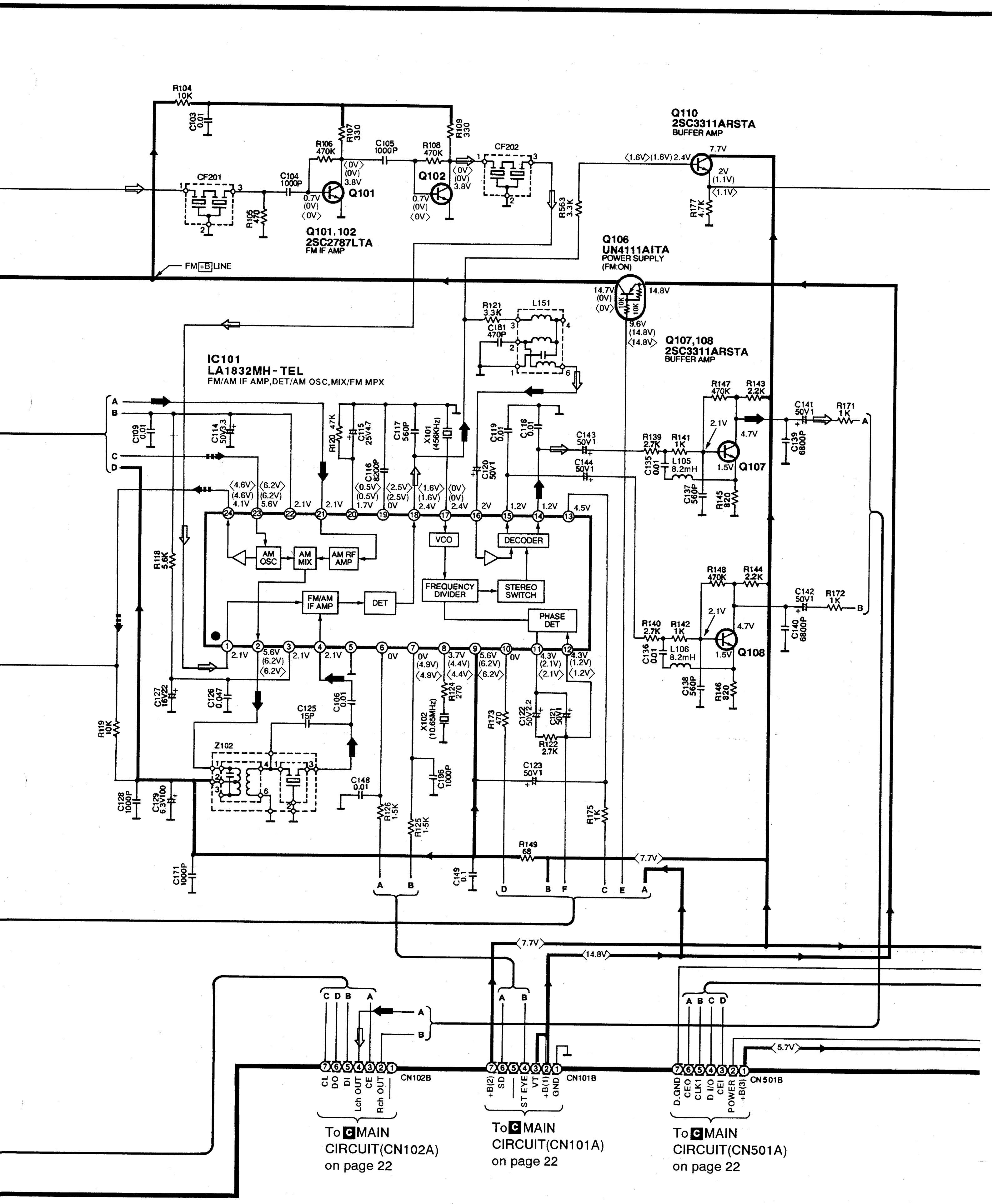
- Voltage and signal line

━━▶━━: Positive voltage line
▪▪▪▶▪▪▪: Negative voltage line
⇨ : FM signal line
▫▫▫⇨ : FM OSC signal line
➡ : AM (LW/ MW) signal line
▪▪▪➡ : AM (LW/MW) OSC signal line
⇨ : REC OUT line
⟹ : Center speaker drive signal line
▫▫▫➡ : Surround speaker drive signal line

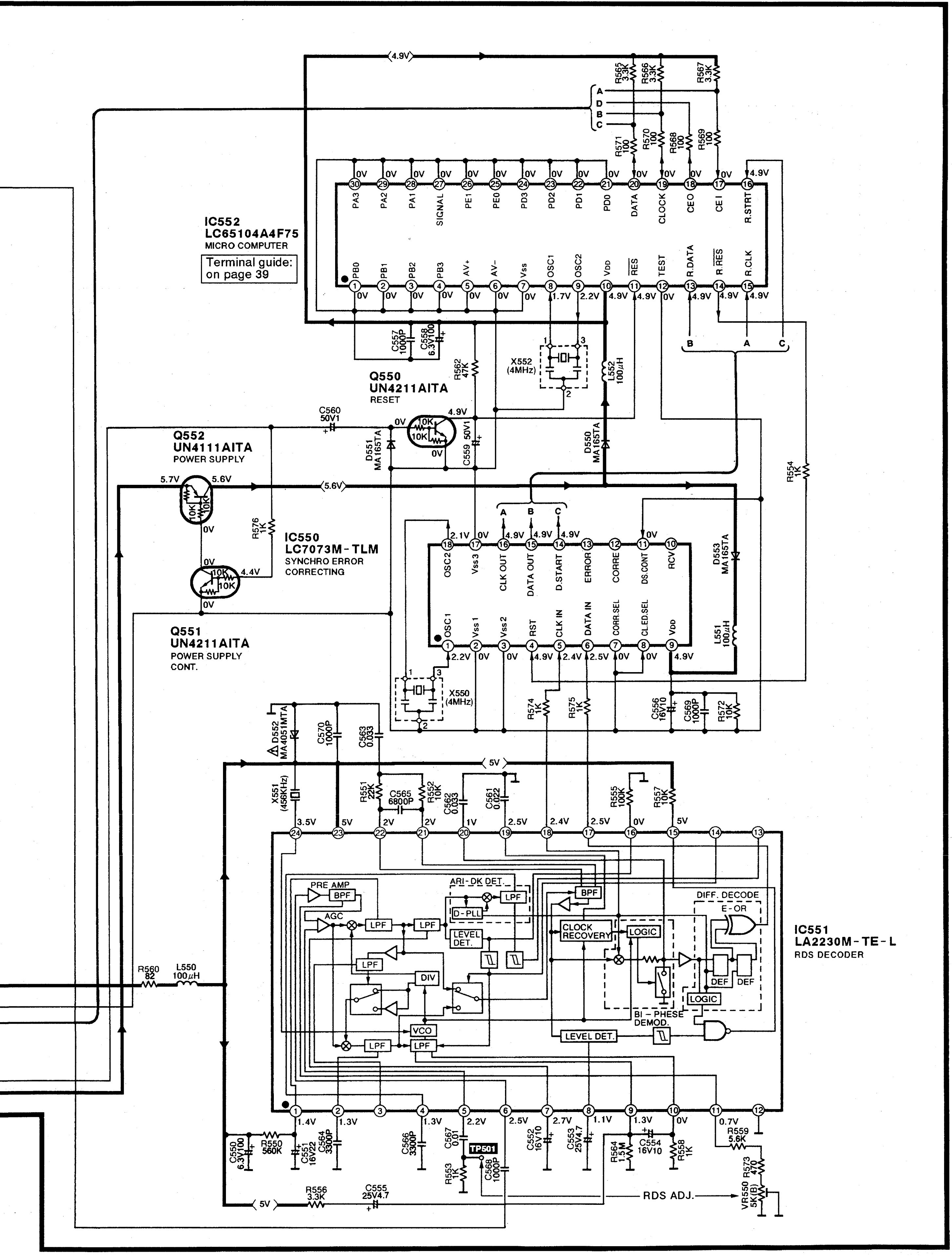
## A TUNER CIRCUIT For 〔E〕 area. (P.C. Board: on page 27)



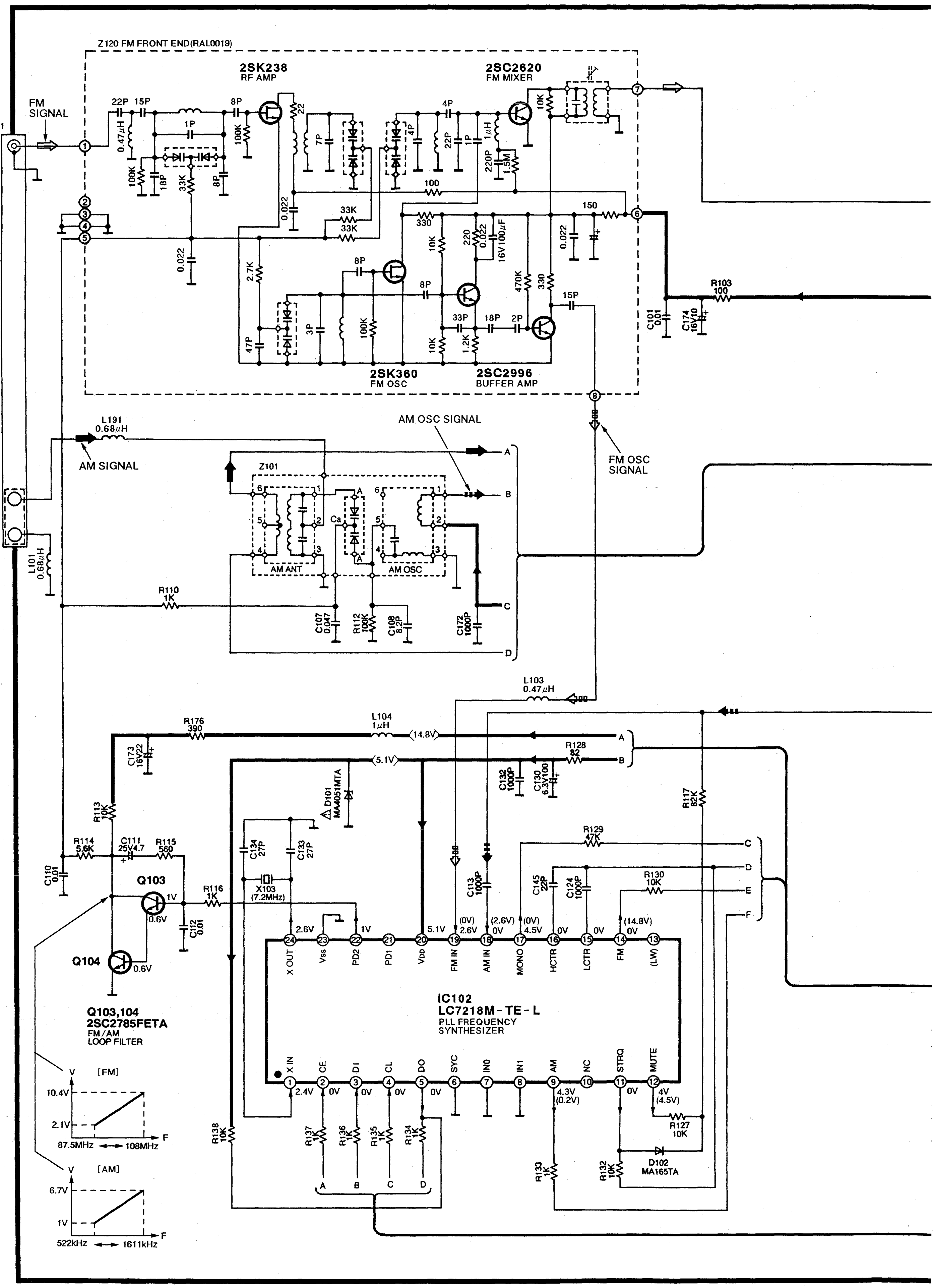
Z120 FM FRONT END(RAL0019)
2SK238
RF AMP
2SC2620
FM MIXER
FM SIGNAL
JK101
FM ANT (75Ω)
2SK360
FM OSC
2SC2996
BUFFER AMP
R110 1K
FM OSC SIGNAL
R112 100K
C108 10P
C107 0.047
AM(LW/MW) OSC SIGNAL
AM ANT EXT
LOOP
L191 0.68μH
Z191
MW ANT
MW OSC
LW ANT
LW OSC
AM (LW/MW) SIGNAL
L101 0.68μH
L103 0.47μH
R103 100
C101 0.01
C174 16V10
Q193
Q192
Q191
R193 1.8K
R195 2.2K
R194 1.2K
R192 1.2K
R191 10K
C172 1000P
Q191,192,193
2SC3311ARSTA
LW/MW SWITCHING
[FM]
10.4V
2.1V
87.5MHz
108MHz
R176 390
C173 16V22
L104 1μH
R128 82
(14.8V)
(5.1V)
D101 MA4051MTA
C132 1000P
C130 6.3V100
R113 10K
R114 5.6K
C111 25V4.7
R115 560
C110 0.01
Q103
Q104
R116 1K
C112 0.01
C134 27P
C133 27P
X103 (7.2MHz)
R129 47K
C113 1000P
C145 22P
C124 1000P
R130 10K
Q103,104
2SC2785FETA
FM/AM(LW/MW) LOOP FILTER
[LW]
5V
1.3V
144kHz
288kHz
[MW]
6.7V
1V
522kHz
1611kHz
X OUT
Vss
PD2
PD1
VDD
FM IN
AM IN
MONO
HCTR
LCTR
FM
LW
X IN
CE
DI
CL
DO
SYC
IN0
IN1
AM
NC
STRQ
MUTE
R117 82K
R127 10K
D102 MA165TA
R138 10K
R137 1K
R136 1K
R135 1K
R134 1K
R133 1K
R132 10K
IC102
LC7218M-TE-L
PLL FREQUENCY SYNTHESIZER
A
B
C
D
E
F

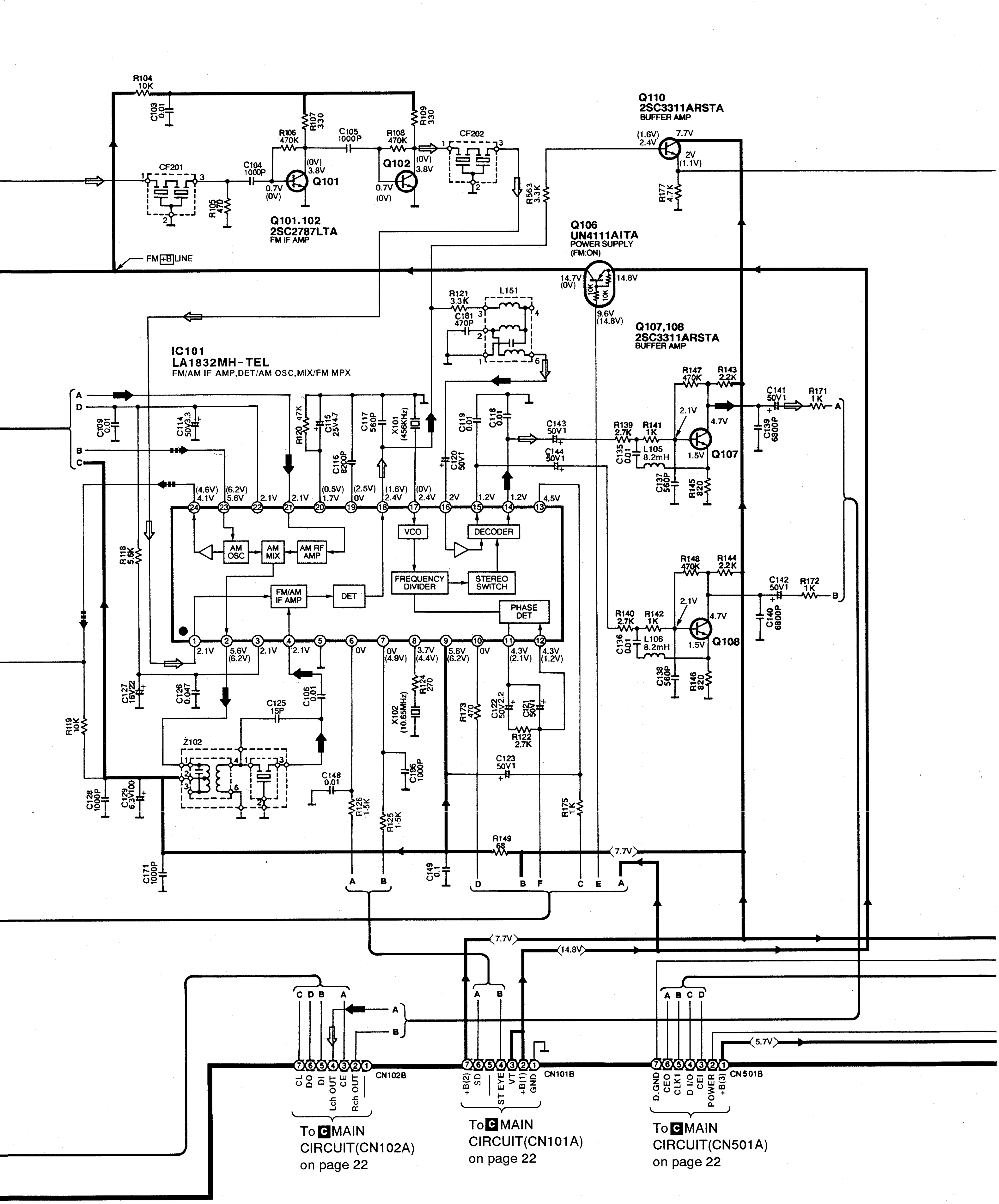

R104 10K
C103 0.01
R107 330
R109 330
R106 470K
C105 1000P
R108 470K
CF202
CF201
C104 1000P
R105 470
Q101
Q102
Q101,102
2SC2787LTA
FM IF AMP
Q110
2SC3311ARSTA
BUFFER AMP
R563 3.3K
R177 4.7K
Q106
UN4111AITA
POWER SUPPLY
(FM:ON)
FM +B LINE
R121 3.3K
L151
C181 470P
Q107,108
2SC3311ARSTA
BUFFER AMP
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
C109 0.01
C114 50V3.3
R120 47K
C115 25V4.7
C116 8200P
C117 560P
X101 (456KHz)
C119 0.01
C118 0.01
C120 50V1
C143 50V1
C144 50V1
R147 470K
R143 2.2K
C141 50V1
R171 1K
R139 2.7K
R141 1K
C135 0.01
L105 8.2mH
C137 560P
R145 820
C139 6800P
Q107
AM OSC
AM MIX
AM RF AMP
VCO
DECODER
FREQUENCY DIVIDER
STEREO SWITCH
FM/AM IF AMP
DET
PHASE DET
R118 5.6K
R148 470K
R144 2.2K
C142 50V1
R172 1K
R140 2.7K
R142 1K
C136 0.01
L106 8.2mH
C138 560P
R146 820
C140 6800P
Q108
C127 16V22
C126 0.047
C125 15P
C106 0.01
X102 (10.65MHz)
R124 270
R173 470
C122 50V2.2
C121 50V1
R122 2.7K
R119 10K
Z102
C148 0.01
C196 1000P
C123 50V1
C128 1000P
C129 6.3V100
R126 1.5K
R125 1.5K
R175 1K
R149 68
C171 1000P
C149 0.1
CN102B
CL
DO
DI
Lch OUT
CE
Rch OUT
CN101B
+B(2)
SD
ST EYE
VT
+B(1)
GND
CN501B
D.GND
CEO
CLK1
D I/O
CEI
POWER
+B(3)
To C MAIN CIRCUIT(CN102A) on page 22
To C MAIN CIRCUIT(CN101A) on page 22
To C MAIN CIRCUIT(CN501A) on page 22

## A TUNER CIRCUIT For〔E〕area. (P.C.Board:on page 27)


IC552
LC65104A4F75
MICRO COMPUTER
Terminal guide: on page 39
PA3
PA2
PA1
SIGNAL
PE1
PE0
PD3
PD2
PD1
PD0
DATA
CLOCK
CEO
CE I
R.STRT
PB0
PB1
PB2
PB3
AV+
AV-
Vss
OSC1
OSC2
VDD
RES
TEST
R.DATA
R.RES
R.CLK
4.9V
R565 3.3K
R566 3.3K
R567 3.3K
R571 100
R570 100
R568 100
R569 100
A
D
B
C
C557 1000P
C558 6.3V100
X552 (4MHz)
L552 100μH
Q550
UN4211AITA
RESET
R562 47K
C560 50V1
C559 50V1
D551 MA165TA
D550 MA165TA
Q552
UN4111AITA
POWER SUPPLY
5.7V
5.6V
R576 1K
Q551
UN4211AITA
POWER SUPPLY CONT.
4.4V
R554 1K
IC550
LC7073M-TLM
SYNCHRO ERROR CORRECTING
OSC2
Vss3
CLK OUT
DATA OUT
D.START
ERROR
CORRE
DS.CONT
RCV
OSC1
Vss1
Vss2
RST
CLK IN
DATA IN
CORR.SEL
CL.ED.SEL
VDD
D553 MA165TA
L551 100μH
X550 (4MHz)
R574 1K
R575 1K
C556 16V10
C569 1000P
R572 10K
D552 MA4051MTA
C570 1000P
C563 0.033
X551 (456KHz)
5V
R551 22K
C565 6800P
R552 10K
C562 0.033
C561 0.022
R555 100K
R557 10K
IC551
LA2230M-TE-L
RDS DECODER
PRE AMP
BPF
AGC
LPF
ARI-DK DET.
D-PLL
LEVEL DET.
CLOCK RECOVERY
LOGIC
DIFF. DECODE
E-OR
DEF
DIV
VCO
BI-PHESE DEMOD.
LEVEL DET.
R560 82
L550 100μH
C550 6.3V100
R550 560K
C551 16V22
C564 3300P
C566 3300P
C567 0.01
TP501
R553 1K
C568 1000P
C552 16V10
C553 25V4.7
R564 1.5M
C554 16V10
R558 1K
R559 5.6K
R573 470
VR550 5K(B)
RDS ADJ.
R556 3.3K
C555 25V4.7

## A TUNER CIRCUIT For〔EG〕area. (P.C. Board: on page 27)


Z120 FM FRONT END(RAL0019)
2SK238
RF AMP
2SC2620
FM MIXER
FM SIGNAL
JK101
FM ANT (75Ω)
22P
15P
8P
1P
0.47μH
100K
18P
33K
8P
22
7P
4P
4P
22P
1P
1μH
220P
1.5M
10K
100
33K
33K
0.022
0.022
150
330
10K
220
0.022
16V100μF
470K
330
0.022
2.7K
8P
8P
15P
47P
3P
100K
10K
1.2K
33P
18P
2P
2SK360
FM OSC
2SC2996
BUFFER AMP
R103
100
C101
0.01
C174
16V10
L191
0.68μH
AM SIGNAL
AM OSC SIGNAL
FM OSC SIGNAL
AM ANT
EXT
LOOP
Z101
AM ANT
AM OSC
Ca
L101
0.68μH
R110
1K
C107
0.047
R112
100K
C108
8.2P
C172
1000P
A
B
C
D
L103
0.47μH
L104
1μH
(14.8V)
R176
390
C173
16V22
R128
82
(5.1V)
D101
MA4051MTA
C132
1000P
C130
6.3V100
R117
82K
R113
10K
R114
5.6K
C111
25V4.7
R115
560
C110
0.01
C134
27P
C133
27P
X103
(7.2MHz)
R129
47K
C113
1000P
C145
22P
C124
1000P
R130
10K
Q103
1V
0.6V
R116
1K
C112
0.01
Q104
0.6V
2.6V
1V
5.1V
(0V)
2.6V
(2.6V)
0V
(0V)
4.5V
0V
0V
(14.8V)
0V
X OUT
Vss
PD2
PD1
VDD
FM IN
AM IN
MONO
HCTR
LCTR
FM
(LW)
IC102
LC7218M-TE-L
PLL FREQUENCY
SYNTHESIZER
X IN
CE
DI
CL
DO
SYC
IN0
IN1
AM
NC
STRQ
MUTE
2.4V
0V
0V
0V
0V
4.3V
(0.2V)
0V
4V
(4.5V)
R127
10K
R138
10K
R137
1K
R136
1K
R135
1K
R134
1K
R133
1K
R132
10K
D102
MA165TA
Q103,104
2SC2785FETA
FM/AM
LOOP FILTER
V
〔FM〕
10.4V
2.1V
F
87.5MHz ←→ 108MHz
V
〔AM〕
6.7V
1V
F
522kHz ←→ 1611kHz


R104
10K
C103
0.01
R106
470K
R107
330
C105
1000P
R108
470K
R109
330
CF202
CF201
C104
1000P
Q101
Q102
(0V)
3.8V
0.7V
(0V)
R105
470
R563
3.3K
Q101,102
2SC2787LTA
FM IF AMP
FM +B LINE
Q110
2SC3311ARSTA
BUFFER AMP
(1.6V)
2.4V
7.7V
2V
(1.1V)
R177
4.7K
Q106
UN4111AITA
POWER SUPPLY
(FM:ON)
14.7V
(0V)
14.8V
9.6V
(14.8V)
10K
R121
3.3K
L151
C181
470P
Q107,108
2SC3311ARSTA
BUFFER AMP
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
A
D
B
C
C109
0.01
C114
50V3.3
R120 47K
C115
25V47
C116
8200P
C117
560P
X101
(456KHz)
C119
0.01
C118
0.01
C120
50V1
C143
50V1
C144
50V1
R147
470K
R143
2.2K
C141
50V1
R171
1K
R139
2.7K
R141
1K
C135
0.01
L105
8.2mH
C137
560P
R145
820
C139
6800P
2.1V
4.7V
1.5V
Q107
(4.6V)
4.1V
(6.2V)
5.6V
2.1V
(0.5V)
1.7V
(2.5V)
0V
(1.6V)
2.4V
(0V)
2.4V
2V
1.2V
4.5V
AM OSC
AM MIX
AM RF AMP
VCO
DECODER
FREQUENCY DIVIDER
STEREO SWITCH
FM/AM IF AMP
DET
PHASE DET
R118
5.6K
R148
470K
R144
2.2K
C142
50V1
R172
1K
R140
2.7K
R142
1K
C136
0.01
L106
8.2mH
C138
560P
R146
820
C140
6800P
Q108
(6.2V)
(4.9V)
3.7V
(4.4V)
5.6V
(6.2V)
4.3V
(2.1V)
4.3V
(1.2V)
C127
16V22
C126
0.047
C125
15P
C106
0.01
X102
(10.65MHz)
R124
270
R173
470
C122
50V2.2
C121
50V1
R122
2.7K
Z102
C123
50V1
C196
1000P
C148
0.01
R119
10K
C128
1000P
C129
6.3V100
R126
1.5K
R125
1.5K
R175
1K
R149
68
(7.7V)
C171
1000P
C149
0.1
(14.8V)
(5.7V)
CL
DO
DI
Lch OUT
CE
Rch OUT
CN102B
+B(2)
SD
ST EYE
VT
+B(1)
GND
CN101B
D.GND
CEO
CLK1
D I/O
CEI
POWER
+B(3)
CN501B
To C MAIN CIRCUIT(CN102A) on page 22
To C MAIN CIRCUIT(CN101A) on page 22
To C MAIN CIRCUIT(CN501A) on page 22

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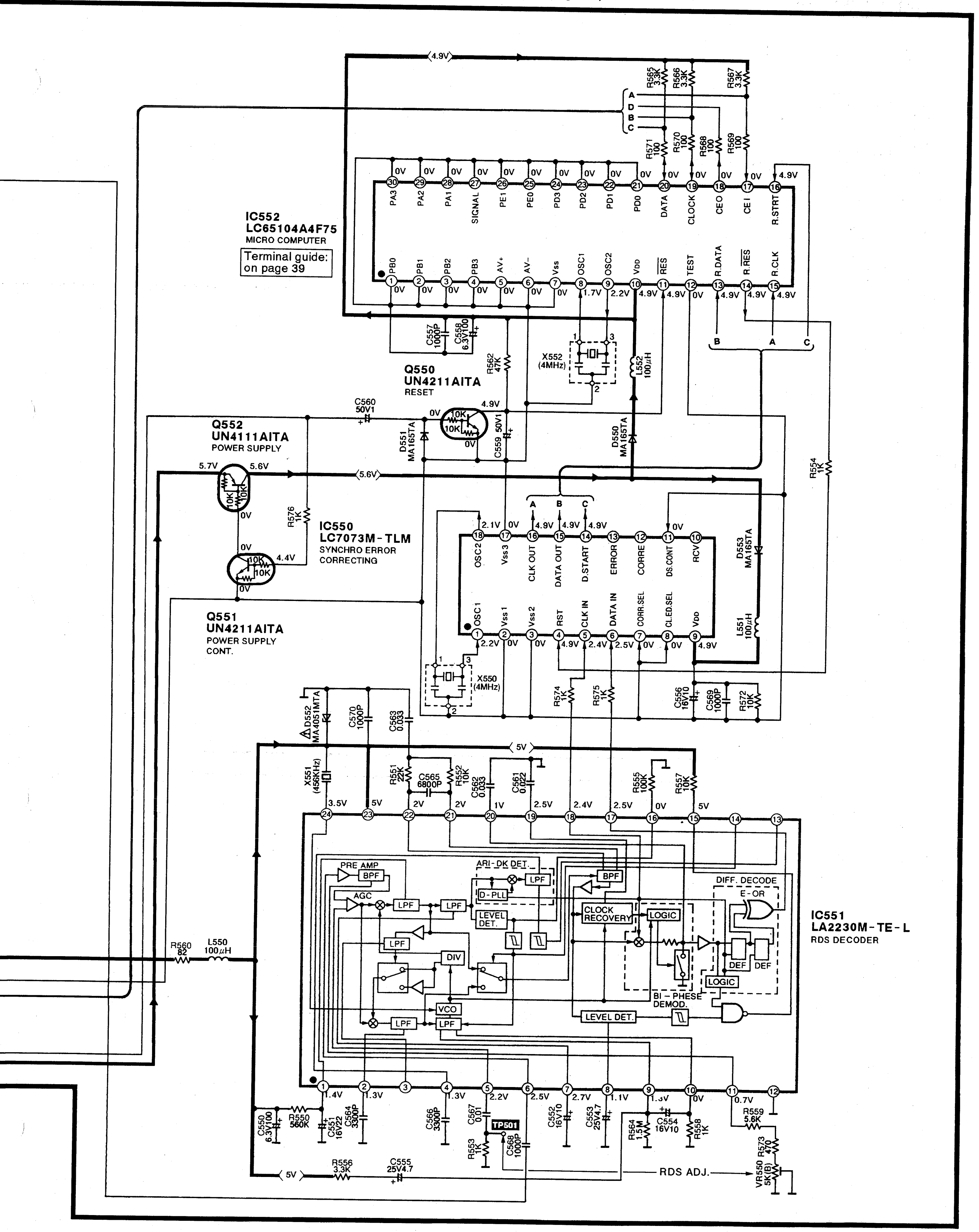
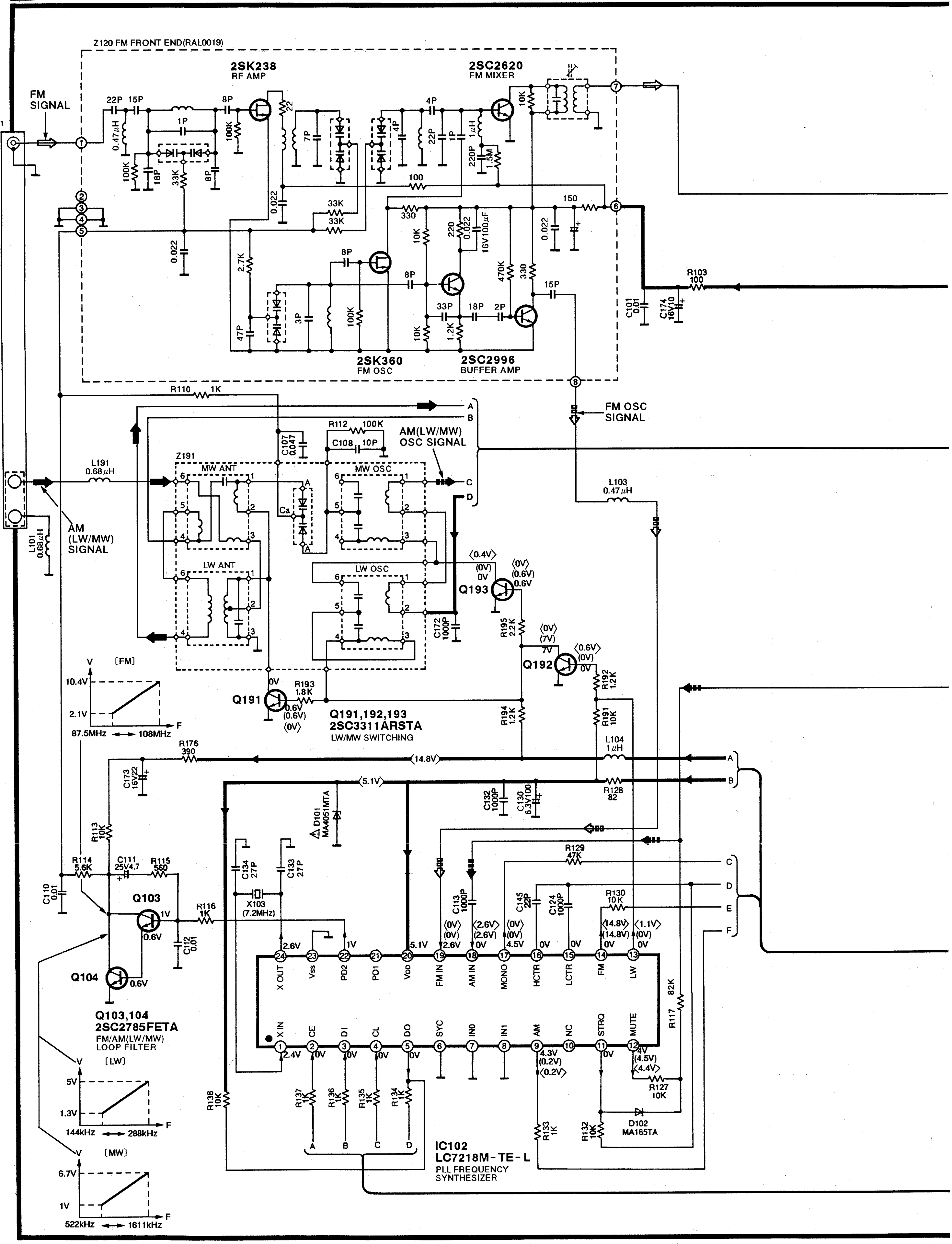
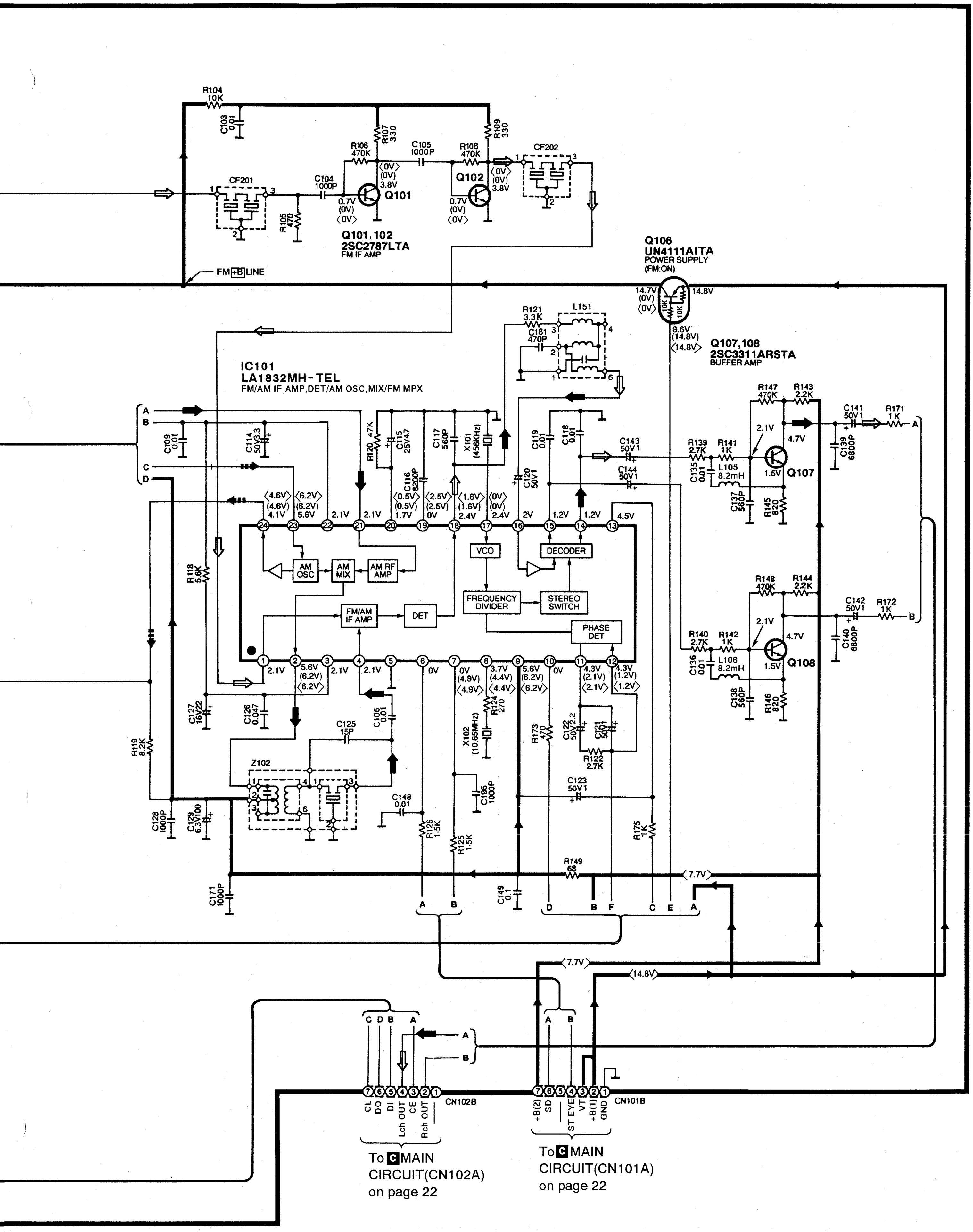
## **A** TUNER CIRCUIT For〔EG〕area. (P.C.Board:on page 27)

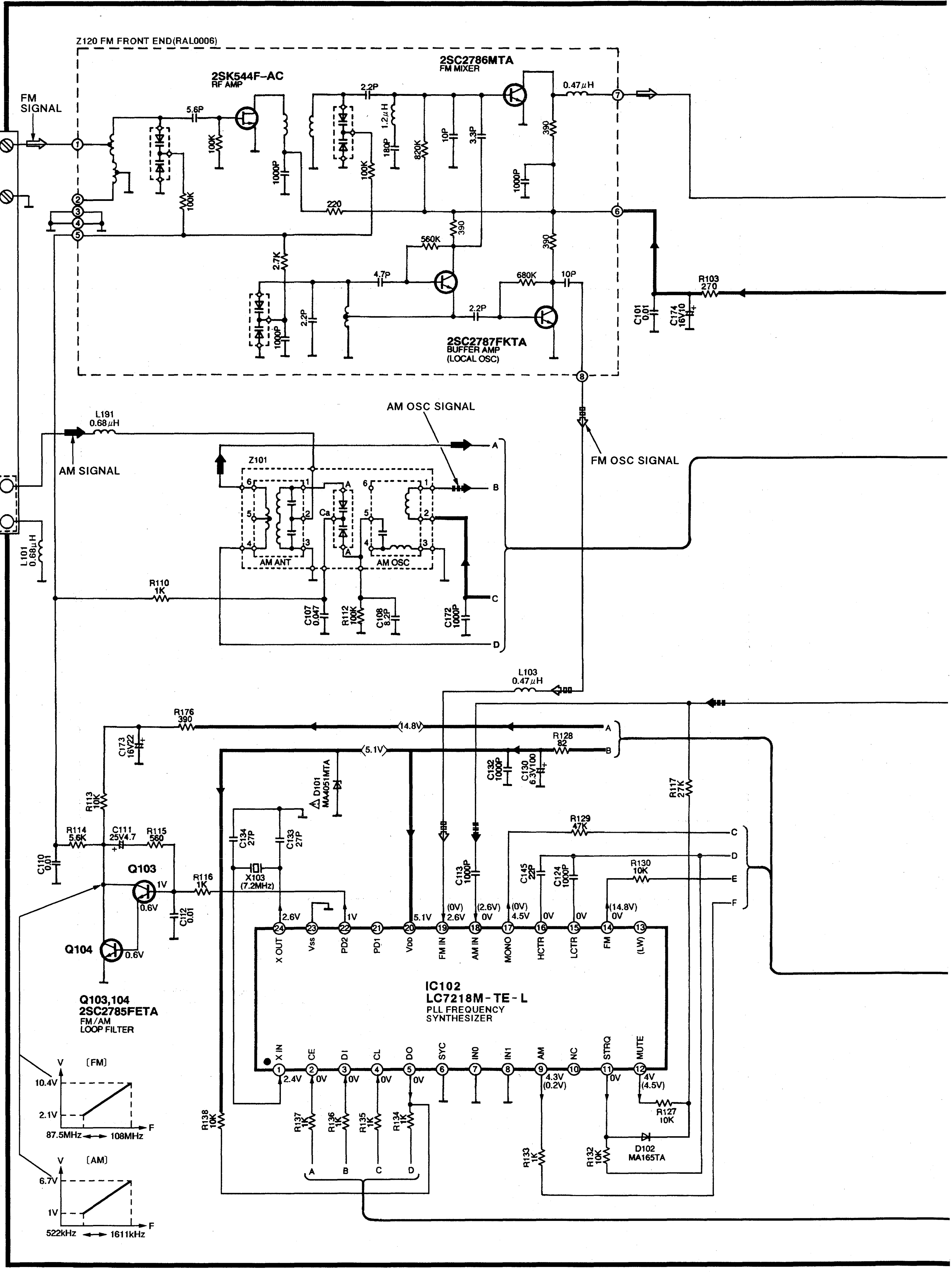

IC552
LC65104A4F75
MICRO COMPUTER
Terminal guide: on page 39
PA3
PA2
PA1
SIGNAL
PE1
PE0
PD3
PD2
PD1
PD0
DATA
CLOCK
CEO
CE I
R.STRT
PB0
PB1
PB2
PB3
AV+
AV-
Vss
OSC1
OSC2
VDD
RES
TEST
R.DATA
R.RES
R.CLK
4.9V
R565 3.3K
R566 3.3K
R567 3.3K
R571 100
R570 100
R568 100
R569 100
A
D
B
C
C557 1000P
C558 6.3V100
R562 47K
X552 (4MHz)
L552 100μH
Q550
UN4211AITA
RESET
C560 50V1
D551 MA165TA
C559 50V1
D550 MA165TA
Q552
UN4111AITA
POWER SUPPLY
5.7V
5.6V
R576 1K
R554 1K
IC550
LC7073M-TLM
SYNCHRO ERROR CORRECTING
OSC2
Vss3
CLK OUT
DATA OUT
D.START
ERROR
CORRE
DS.CONT
RCV
OSC1
Vss1
Vss2
RST
CLK IN
DATA IN
CORR.SEL
CL.ED.SEL
VDD
D553 MA165TA
L551 100μH
Q551
UN4211AITA
POWER SUPPLY CONT.
X550 (4MHz)
R574 1K
R575 1K
C556 16V10
C569 1000P
R572 10K
D552 MA4051MTA
C570 1000P
C563 0.033
5V
X551 (456KHz)
R551 22K
C565 6800P
R552 10K
C562 0.033
C561 0.022
R555 100K
R557 10K
IC551
LA2230M-TE-L
RDS DECODER
PRE AMP
BPF
AGC
LPF
ARI-DK DET.
D-PLL
LEVEL DET.
DIV
VCO
CLOCK RECOVERY
LOGIC
DIFF. DECODE
E-OR
DEF
BI-PHESE DEMOD.
LEVEL DET.
R560 82
L550 100μH
C550 6.3V100
R550 560K
C551 16V22
C564 3300P
C566 3300P
C567 0.01
TP501
R553 1K
C568 1000P
C552 16V10
C553 25V4.7
R564 1.5M
C554 16V10
R558 1K
R559 5.6K
R573 470
VR550 5K(B)
RDS ADJ.
R556 3.3K
C555 25V4.7
5V

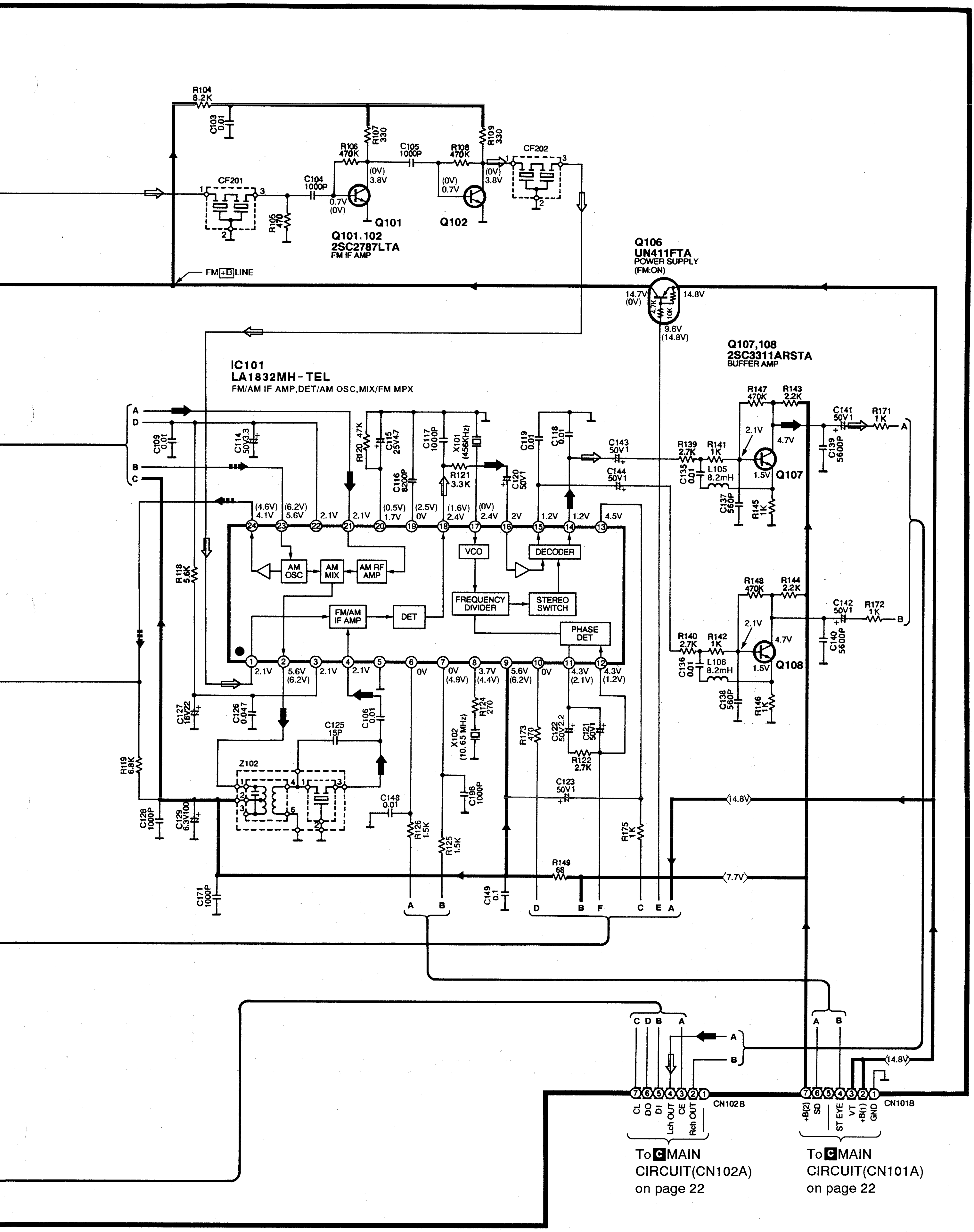
## A TUNER CIRCUIT For 〔EB〕 area. (P.C. Board: on page 28)


Z120 FM FRONT END(RAL0019)
2SK238
RF AMP
2SC2620
FM MIXER
FM SIGNAL
JK101
FM ANT (75Ω)
22P
15P
8P
4P
1P
0.47μH
100K
18P
33K
0.022
22
7P
22P
1μH
220P
1.5M
10K
100
33K
150
330
220
16V100μF
2.7K
8P
470K
330
15P
R103 100
C101 0.01
C174 16V10
3P
100K
33P
18P
2P
1.2K
47P
2SK360
FM OSC
2SC2996
BUFFER AMP
R110 1K
FM OSC SIGNAL
R112 100K
C107 0.047
C108 10P
AM(LW/MW) OSC SIGNAL
AM ANT EXT
LOOP
L191 0.68μH
Z191
MW ANT
MW OSC
LW ANT
LW OSC
AM (LW/MW) SIGNAL
L101 0.68μH
L103 0.47μH
C172 1000P
Q193
Q192
Q191
R195 2.2K
R193 1.8K
R192 1.2K
R194 1.2K
R191 10K
Q191,192,193
2SC3311ARSTA
LW/MW SWITCHING
L104 1μH
R176 390
C173 16V22
(14.8V)
(5.1V)
D101 MA4051MTA
C132 1000P
C130 6.3V100
R128 82
R113 10K
R114 5.6K
C111 25V4.7
R115 560
C110 0.01
Q103
Q104
R116 1K
C112 0.01
C134 27P
C133 27P
X103 (7.2MHz)
R129 47K
C113 1000P
C145 22P
C124 1000P
R130 10K
X OUT
Vss
PD2
PD1
VDD
FM IN
AM IN
MONO
HCTR
LCTR
FM
LW
X IN
CE
DI
CL
DO
SYC
IN0
IN1
AM
NC
STRQ
MUTE
R117 82K
R127 10K
D102 MA165TA
R138 10K
R137 1K
R136 1K
R135 1K
R134 1K
R133 1K
R132 10K
IC102
LC7218M-TE-L
PLL FREQUENCY SYNTHESIZER
Q103,104
2SC2785FETA
FM/AM(LW/MW) LOOP FILTER
〔FM〕
10.4V
2.1V
87.5MHz ↔ 108MHz
〔LW〕
5V
1.3V
144kHz ↔ 288kHz
〔MW〕
6.7V
1V
522kHz ↔ 1611kHz

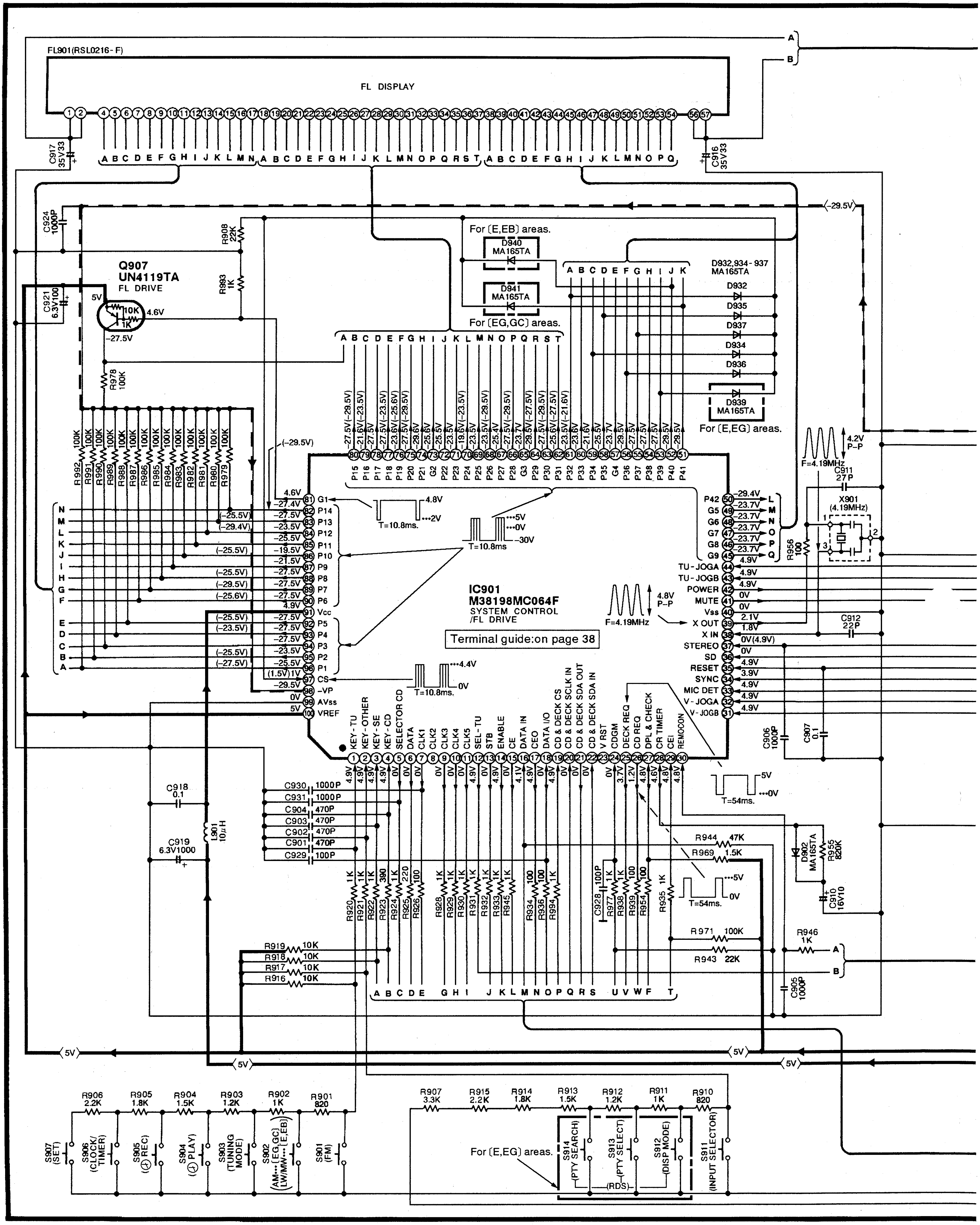

R104 10K
C103 0.01
R107 330
R109 330
R106 470K
C105 1000P
R108 470K
CF202
CF201
C104 1000P
Q101
Q102
R105 470
Q101,102
2SC2787LTA
FM IF AMP
FM+B LINE
Q106
UN4111AITA
POWER SUPPLY
(FM:ON)
14.7V (0V) 〈0V〉
14.8V
9.6V (14.8V) 〈14.8V〉
Q107,108
2SC3311ARSTA
BUFFER AMP
R121 3.3K
L151
C181 470P
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
R120 47K
C115 25V4.7
C116 8200P
C117 560P
X101 (456KHz)
C120 50V1
C119 0.01
C118 0.01
C143 50V1
C144 50V1
C109 0.01
C114 50V3.3
R147 470K
R143 2.2K
R139 2.7K
R141 1K
C135 0.01
L105 8.2mH
C137 560P
R145 820
Q107
C141 50V1
R171 1K
C139 6800P
R148 470K
R144 2.2K
R140 2.7K
R142 1K
C136 0.01
L106 8.2mH
C138 560P
R146 820
Q108
C142 50V1
R172 1K
C140 6800P
AM OSC
AM MIX
AM RF AMP
FM/AM IF AMP
DET
VCO
DECODER
FREQUENCY DIVIDER
STEREO SWITCH
PHASE DET
R118 5.6K
R119 8.2K
C127 16V22
C126 0.047
C106 0.01
C125 15P
Z102
C128 1000P
C129 6.3V100
C148 0.01
R126 1.5K
R125 1.5K
X102 (10.65MHz)
R124 270
C196 1000P
R173 470
C122 50V2.2
C121 50V1
R122 2.7K
C123 50V1
R175 1K
R149 68
C149 0.1
C171 1000P
〈7.7V〉
〈14.8V〉
CN102B
CL DO DI Lch OUT CE Rch OUT
CN101B
+B(2) SD ST EYE VT +B(1) GND
To C MAIN CIRCUIT(CN102A) on page 22
To C MAIN CIRCUIT(CN101A) on page 22

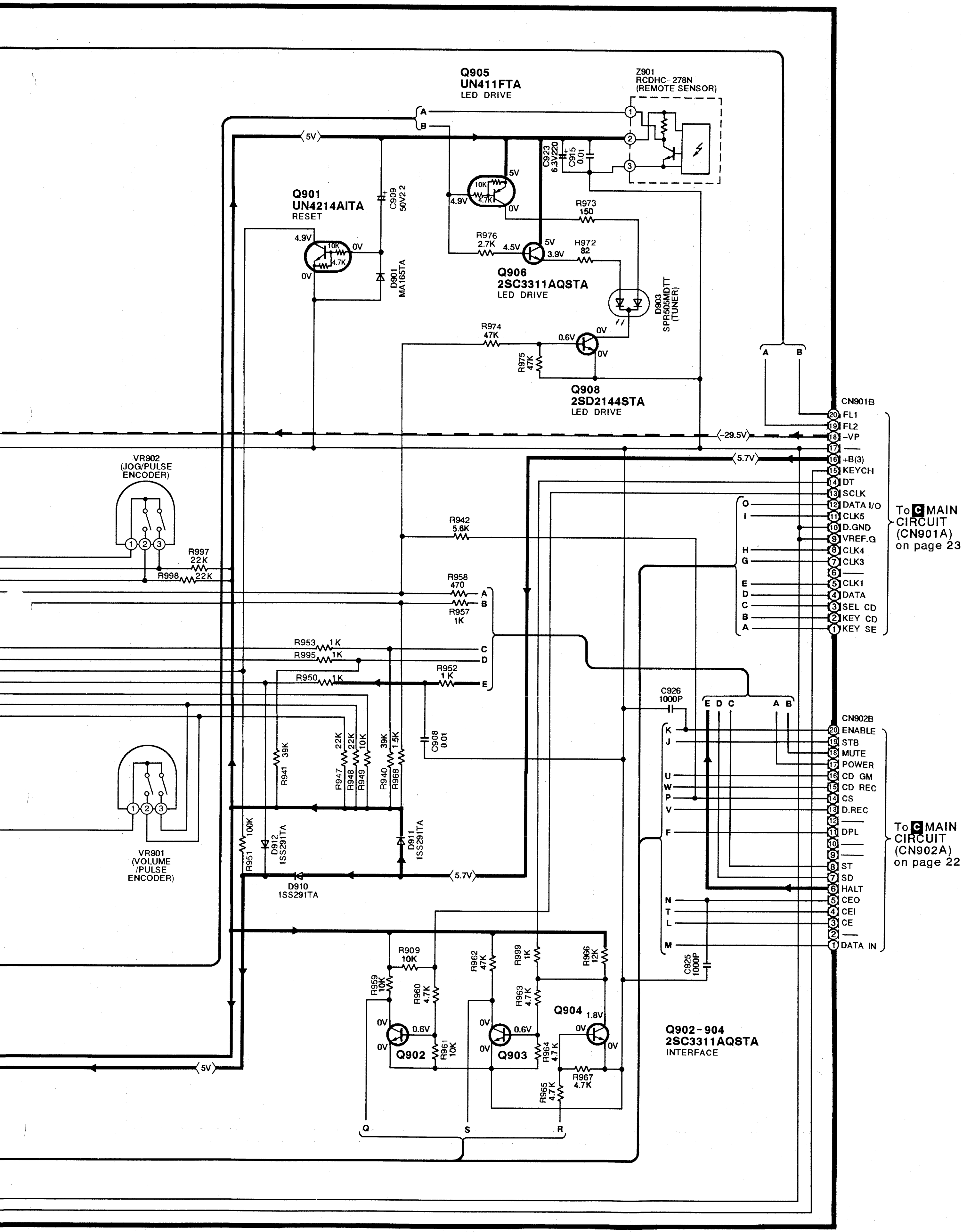
## A TUNER CIRCUIT For〔GC〕area. (P.C. Board: on page 28)


Z120 FM FRONT END(RAL0006)
2SK544F-AC
RF AMP
2SC2786MTA
FM MIXER
0.47μH
FM SIGNAL
JK101
FM ANT
75Ω
GND
5.6P
100K
1000P
2.2P
1.2μH
180P
820K
10P
3.3P
390
1000P
100K
220
390
560K
2.7K
4.7P
680K
10P
2.2P
1000P
2.2P
2SC2787FKTA
BUFFER AMP
(LOCAL OSC)
C101 0.01
C174 16V10
R103 270
AM OSC SIGNAL
FM OSC SIGNAL
L191 0.68μH
AM ANT EXT
LOOP
AM SIGNAL
Z101
AM ANT
AM OSC
Ca
L101 0.68μH
R110 1K
C107 0.047
R112 100K
C108 8.2P
C172 1000P
A
B
C
D
L103 0.47μH
R176 390
C173 16V22
(14.8V)
R128 82
(5.1V)
D101 MA4051MTA
C132 1000P
C130 6.3V100
R117 27K
R113 10K
R114 5.6K
C111 25V4.7
R115 560
C110 0.01
Q103
Q104
1V
0.6V
0.6V
R116 1K
C112 0.01
C134 27P
C133 27P
X103 (7.2MHz)
C113 1000P
C145 22P
C124 1000P
R129 47K
R130 10K
E
F
2.6V
1V
5.1V
(0V) 2.6V
(2.6V) 0V
(0V) 4.5V
0V
0V
(14.8V) 0V
X OUT
Vss
PD2
PD1
VDD
FM IN
AM IN
MONO
HCTR
LCTR
FM
(LW)
IC102
LC7218M-TE-L
PLL FREQUENCY SYNTHESIZER
X IN
CE
DI
CL
DO
SYC
IN0
IN1
AM
NC
STRQ
MUTE
2.4V
0V
0V
0V
0V
4.3V (0.2V)
0V
4V (4.5V)
R127 10K
D102 MA165TA
R138 10K
R137 1K
R136 1K
R135 1K
R134 1K
R133 1K
R132 10K
Q103,104
2SC2785FETA
FM/AM LOOP FILTER
V
〔FM〕
10.4V
2.1V
F
87.5MHz
108MHz
〔AM〕
6.7V
1V
522kHz
1611kHz

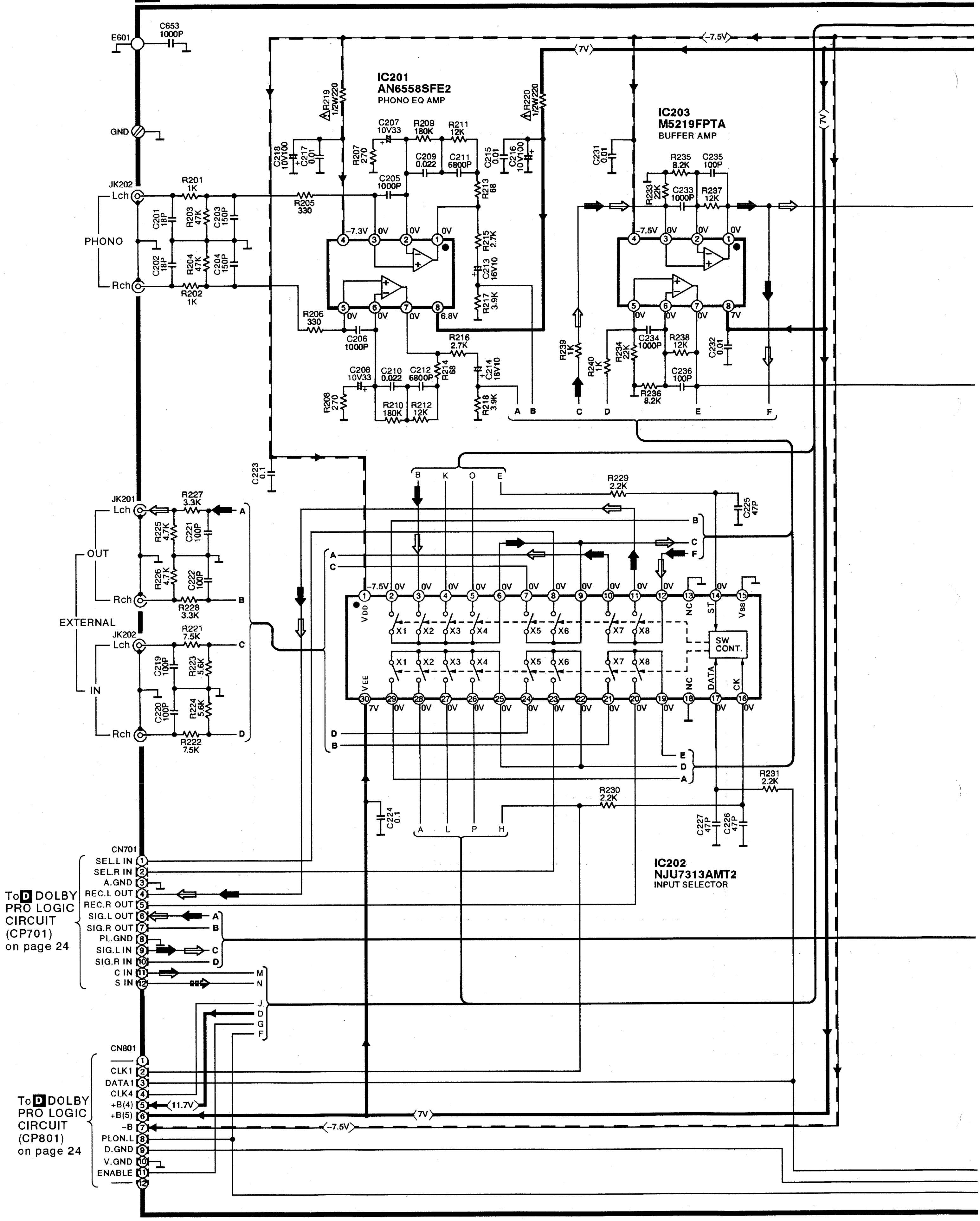

R104
8.2K
C103
0.01
R107
330
R109
330
R106
470K
C105
1000P
R108
470K
CF202
CF201
C104
1000P
(0V)
3.8V
0.7V
(0V)
R105
470
Q101
Q102
Q101,102
2SC2787LTA
FM IF AMP
FM +B LINE
Q106
UN411FTA
POWER SUPPLY
(FM:ON)
14.7V
(0V)
14.8V
4.7K
10K
9.6V
(14.8V)
Q107,108
2SC3311ARSTA
BUFFER AMP
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
C109
0.01
C114
50V3.3
R120 47K
C115
25V4.7
C117
1000P
X101
(456KHz)
C116
8200P
R121
3.3K
C120
50V1
C119
0.01
C118
0.01
C143
50V1
C144
50V1
R147
470K
R143
2.2K
C141
50V1
R171
1K
R139
2.7K
R141
1K
C135
0.01
L105
8.2mH
2.1V
4.7V
1.5V
Q107
C139
5600P
C137
560P
R145
1K
(4.6V)
4.1V
(6.2V)
5.6V
2.1V
2.1V
(0.5V)
1.7V
(2.5V)
0V
(1.6V)
2.4V
(0V)
2.4V
2V
1.2V
1.2V
4.5V
AM OSC
AM MIX
AM RF AMP
VCO
DECODER
FREQUENCY DIVIDER
STEREO SWITCH
FM/AM IF AMP
DET
PHASE DET
R118
5.6K
R148
470K
R144
2.2K
C142
50V1
R172
1K
R140
2.7K
R142
1K
C136
0.01
L106
8.2mH
2.1V
4.7V
1.5V
Q108
C140
5600P
C138
560P
R146
1K
2.1V
5.6V
(6.2V)
2.1V
2.1V
0V
0V
(4.9V)
3.7V
(4.4V)
5.6V
(6.2V)
0V
4.3V
(2.1V)
4.3V
(1.2V)
C127
16V22
C126
0.047
C106
0.01
C125
15P
X102
(10.65 MHz)
R124
270
R173
470
C122
50V2.2
C121
50V1
R122
2.7K
Z102
R119
6.8K
C148
0.01
C196
1000P
C123
50V1
(14.8V)
C128
1000P
C129
6.3V100
R126
1.5K
R125
1.5K
R175
1K
R149
68
(7.7V)
C171
1000P
C149
0.1
A B
D B F C E A
C D B A
A B
A
B
(14.8V)
CL DO DI Lch OUT CE Rch OUT
CN102B
+B(2) SD ST EYE VT +B(1) GND
CN101B
To C MAIN CIRCUIT(CN102A) on page 22
To C MAIN CIRCUIT(CN101A) on page 22

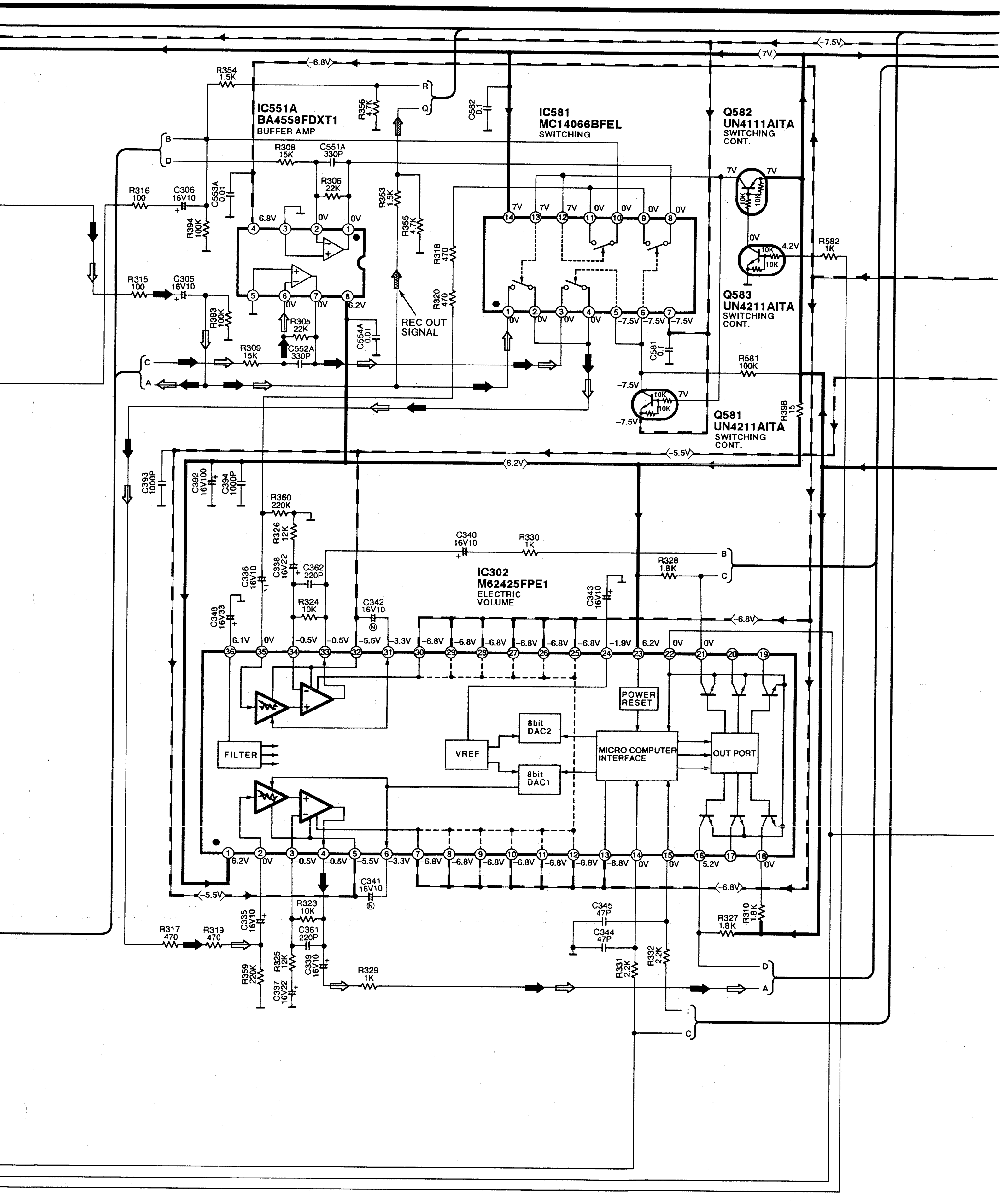
## B OPERATION CIRCUIT (P.C.Board:on page 30)


FL901(RSL0216-F)
FL DISPLAY
C917 35V33
C916 35V33
C924 1000P
C921 6.3V100
Q907
UN4119TA
FL DRIVE
5V
10K
1K
4.6V
-27.5V
R908 22K
R993 1K
R978 100K
(-29.5V)
For〔E,EB〕areas.
D940 MA165TA
D941 MA165TA
For〔EG,GC〕areas.
D932,934-937 MA165TA
D932
D935
D937
D934
D936
D939 MA165TA
For〔E,EG〕areas.
IC901
M38198MC064F
SYSTEM CONTROL
/FL DRIVE
Terminal guide:on page 38
T=10.8ms.
T=10.8ms
4.8V
2V
5V
0V
-30V
4.4V
F=4.19MHz
4.8V P-P
4.2V P-P
C911 27P
X901 (4.19MHz)
C912 22P
R956 100
G1
P14
P13
P12
P11
P10
P9
P8
P7
P6
Vcc
P5
P4
P3
P2
P1
CS
-VP
AVss
VREF
P42
G5
G6
G7
G8
G9
TU-JOGA
TU-JOGB
POWER
MUTE
Vss
X OUT
X IN
STEREO
SD
RESET
SYNC
MIC DET
V-JOGA
V-JOGB
KEY-TU
KEY-OTHER
KEY-SE
KEY-CD
SELECTOR CD
DATA
CLK1
CLK2
CLK3
CLK4
CLK5
SEL-TU
STB
ENABLE
CE
DATA IN
CEO
DATA I/O
CD & DECK CS
CD & DECK SCLK IN
CD & DECK SDA OUT
CD & DECK SDA IN
V RST
CDGM
DECK REQ
CD REQ
DPL & CHECK
CR TIMER
CEI
REMOCON
C906 1000P
C907 0.1
T=54ms.
C918 0.1
C919 6.3V1000
L901 10μH
C930 1000P
C931 1000P
C904 470P
C903 470P
C902 470P
C901 470P
C929 100P
R944 47K
R969 1.5K
D902 MA165TA
R955 820K
C910 16V10
C928 100P
R971 100K
R943 22K
R946 1K
C905 1000P
R919 10K
R918 10K
R917 10K
R916 10K
R906 2.2K
R905 1.8K
R904 1.5K
R903 1.2K
R902 1K
R901 820
S907 (SET)
S906 (CLOCK/TIMER)
S905 REC
S904 PLAY
S903 (TUNING MODE)
S902 (AM···〔EG,GC〕 LW/MW···〔E,EB〕)
S901 (FM)
R907 3.3K
R915 2.2K
R914 1.8K
R913 1.5K
R912 1.2K
R911 1K
R910 820
For〔E,EG〕areas.
S914 (PTY SEARCH)
S913 (PTY SELECT)
S912 (DISP MODE)
S911 (INPUT SELECTOR)
(RDS)
5V
A
B

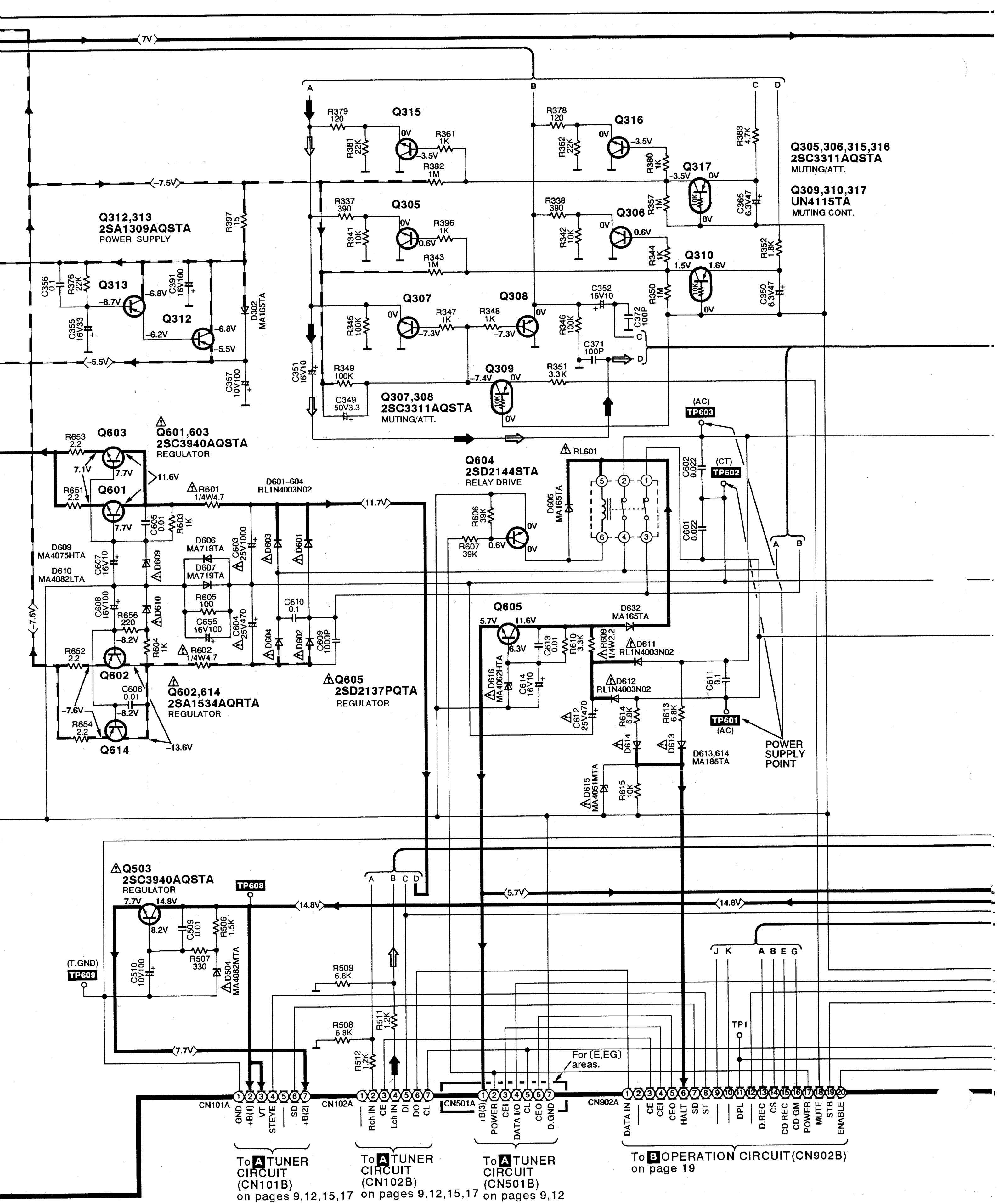

Q905
UN411FTA
LED DRIVE
Z901
RCDHC-278N
(REMOTE SENSOR)
A
B
5V
1
2
3
C923
6.3V220
C915
0.01
Q901
UN4214AITA
RESET
C909
50V2.2
4.9V
10K
4.7K
0V
5V
R973
150
R976
2.7K
4.5V
3.9V
R972
82
D901
MA165TA
Q906
2SC3311AQSTA
LED DRIVE
D903
SPR505MDTT
(TUNER)
R974
47K
0.6V
R975
47K
Q908
2SD2144STA
LED DRIVE
CN901B
20 FL1
19 FL2
18 -VP
17 —
16 +B(3)
15 KEYCH
14 DT
13 SCLK
12 DATA I/O
11 CLK5
10 D.GND
9 VREF.G
8 CLK4
7 CLK3
6 —
5 CLK1
4 DATA
3 SEL CD
2 KEY CD
1 KEY SE
-29.5V
5.7V
O
I
H
G
E
D
C
To C MAIN CIRCUIT (CN901A) on page 23
VR902
(JOG/PULSE ENCODER)
R997
22K
R998
22K
R942
5.6K
R958
470
R957
1K
R953 1K
R995 1K
R950 1K
R952
1K
C908
0.01
C926
1000P
R941 39K
R947 22K
R948 22K
R949 10K
R940 39K
R968 1.5K
D911
1SS291TA
D912
1SS291TA
R951 100K
D910
1SS291TA
VR901
(VOLUME /PULSE ENCODER)
CN902B
20 ENABLE
19 STB
18 MUTE
17 POWER
16 CD GM
15 CD REC
14 CS
13 D.REC
12 —
11 DPL
10 —
9 —
8 ST
7 SD
6 HALT
5 CEO
4 CEI
3 CE
2 —
1 DATA IN
K
J
U
W
P
V
F
N
T
L
M
To C MAIN CIRCUIT (CN902A) on page 22
R909
10K
R959
10K
R960
4.7K
R961
10K
R962
47K
R999
1K
R963
4.7K
R964
4.7K
R966
12K
R967
4.7K
R965
4.7K
C925
1000P
Q902
Q903
Q904
1.8V
0.6V
Q902-904
2SC3311AQSTA
INTERFACE
Q
S
R

## C MAIN CIRCUIT (P.C.Board:on page 29)


E601
C653 1000P
GND
JK202
Lch
Rch
PHONO
R201 1K
R202 1K
C201 18P
C202 18P
R203 47K
R204 47K
C203 150P
C204 150P
R205 330
R206 330
C205 1000P
C206 1000P
IC201
AN6558SFE2
PHONO EQ AMP
R219 1/2W220
R220 1/2W220
C218 10V100
C217 0.01
C207 10V33
R207 270
R209 180K
R211 12K
C209 0.022
C211 6800P
C215 0.01
C216 10V100
R213 68
R215 2.7K
C213 16V10
R217 3.9K
R216 2.7K
R214 68
C214 16V10
R218 3.9K
C208 10V33
R208 270
C210 0.022
C212 6800P
R210 180K
R212 12K
-7.3V
0V
6.8V
-7.5V
7V
IC203
M5219FPTA
BUFFER AMP
C231 0.01
R235 8.2K
C235 100P
R233 22K
C233 1000P
R237 12K
R239 1K
R240 1K
R234 22K
C234 1000P
R238 12K
C232 0.01
C236 100P
R236 8.2K
A B C D E F
C223 0.1
B K O E
R229 2.2K
C225 47P
JK201
OUT
EXTERNAL
IN
R227 3.3K
R225 4.7K
C221 100P
R226 4.7K
C222 100P
R228 3.3K
R221 7.5K
C219 100P
R223 5.6K
C220 100P
R224 5.6K
R222 7.5K
VDD
VEE
X1 X2 X3 X4 X5 X6 X7 X8
NC
ST
Vss
SW CONT.
DATA
CK
C224 0.1
A L P H
R230 2.2K
R231 2.2K
C227 47P
C226 47P
IC202
NJU7313AMT2
INPUT SELECTOR
CN701
SEL.L IN
SEL.R IN
A.GND
REC.L OUT
REC.R OUT
SIG.L OUT
SIG.R OUT
PL.GND
SIG.L IN
SIG.R IN
C IN
S IN
To D DOLBY PRO LOGIC CIRCUIT (CP701) on page 24
M N J D G F
CN801
CLK1
DATA1
CLK4
+B(4)
+B(5)
-B
PLON.L
D.GND
V.GND
ENABLE
11.7V
To D DOLBY PRO LOGIC CIRCUIT (CP801) on page 24


IC551A
BA4558FDXT1
BUFFER AMP
IC581
MC14066BFEL
SWITCHING
Q582
UN4111AITA
SWITCHING CONT.
Q583
UN4211AITA
SWITCHING CONT.
Q581
UN4211AITA
SWITCHING CONT.
IC302
M62425FPE1
ELECTRIC VOLUME
REC OUT SIGNAL
FILTER
VREF
8bit DAC2
8bit DAC1
MICRO COMPUTER INTERFACE
OUT PORT
POWER RESET
R354 1.5K
R356 4.7K
C582 0.1
R308 15K
C551A 330P
R306 22K
R353 1.5K
R355 4.7K
R316 100
C306 16V10
C553A 0.01
R394 100K
R315 100
C305 16V10
R393 100K
R305 22K
C552A 330P
R309 15K
C554A 0.01
R318 470
R320 470
C581 0.1
R581 100K
R582 1K
R398 15
C393 1000P
C392 16V100
C394 1000P
R360 220K
R326 12K
C338 16V22
C362 220P
C336 16V10
C340 16V10
R330 1K
R328 1.8K
C343 16V10
R324 10K
C342 16V10
C348 16V33
C341 16V10
R323 10K
C361 220P
C335 16V10
R317 470
R319 470
R359 220K
R325 12K
C337 16V22
C339 16V10
R329 1K
C345 47P
C344 47P
R331 2.2K
R332 2.2K
R327 1.8K
R310 1.8K
-6.8V
-7.5V
7V
6.2V
-5.5V
A
B
C
D
I
Q
R

## C MAIN CIRCUIT (P.C.Board:on page 29)


7V
−7.5V
−5.5V
A
B
C
D
R379 120
R381 22K
Q315
0V
R361 1K
−3.5V
R382 1M
R378 120
R362 22K
Q316
0V
−3.5V
R380 1K
Q317
−3.5V
0V
R383 4.7K
C365 6.3V47
Q305,306,315,316
2SC3311AQSTA
MUTING/ATT.
Q309,310,317
UN4115TA
MUTING CONT.
R337 390
R341 10K
Q305
0V
R396 1K
0.6V
R343 1M
R338 390
R342 10K
Q306
0V
0.6V
R357 1M
R344 1K
Q310
1.5V
1.6V
R352 1.8K
R350 1M
C350 6.3V47
R397 15
Q312,313
2SA1309AQSTA
POWER SUPPLY
C356 0.1
R376 22K
Q313
−6.7V
−6.8V
C391 16V100
Q312
−6.2V
−6.8V
−5.5V
C355 16V33
D302 MA165TA
C357 10V100
R345 100K
Q307
0V
R347 1K
−7.3V
R348 1K
Q308
−7.3V
0V
R346 100K
C352 16V10
C372 100P
C371 100P
C351 16V10
R349 100K
C349 50V3.3
Q309
−7.4V
0V
R351 3.3K
Q307,308
2SC3311AQSTA
MUTING/ATT.
10K
Q603
R653 2.2
7.1V
7.7V
Q601,603
2SC3940AQSTA
REGULATOR
11.6V
R651 2.2
Q601
7.7V
R601 1/4W4.7
D601–604 RL1N4003N02
11.7V
C605 0.01
R603 1K
D609 MA4075HTA
D610 MA4082LTA
C607 16V10
D609
D606 MA719TA
D607 MA719TA
R605 100
C655 16V100
C603 25V1000
D603
D601
C608 16V100
R656 220
D610
C604 25V470
C610 0.1
−8.2V
R604 1K
R652 2.2
R602 1/4W4.7
D604
D602
C609 1000P
Q602
C606 0.01
−7.6V
−8.2V
R654 2.2
Q614
−13.6V
Q602,614
2SA1534AQRTA
REGULATOR
Q605
2SD2137PQTA
REGULATOR
(AC)
TP603
RL601
Q604
2SD2144STA
RELAY DRIVE
R606 39K
R607 39K
0.6V
0V
0V
D605 MA165TA
C602 0.022
(CT)
TP602
C601 0.022
Q605
5.7V
11.6V
6.3V
C613 0.01
R610 3.3K
R609 1/4W2.2
D632 MA165TA
D611 RL1N4003N02
D616 MA4062HTA
C614 16V10
D612 RL1N4003N02
C611 0.1
C612 25V470
R614 6.8K
R613 6.8K
TP601
(AC)
POWER SUPPLY POINT
D614
D613
D613,614 MA185TA
D615 MA4051MTA
R615 10K
Q503
2SC3940AQSTA
REGULATOR
TP608
7.7V
14.8V
8.2V
C509 0.01
R506 1.5K
14.8V
5.7V
14.8V
(T.GND)
TP609
C510 10V100
R507 330
D504 MA4082MTA
R509 6.8K
R508 6.8K
R511 1.2K
R512 1.2K
7.7V
J K
A B E G
TP1
For (E,EG) areas.
CN101A
GND
+B(1)
VT
STEYE
SD
+B(2)
CN102A
Rch IN
CE
Lch IN
DI
DO
CL
CN501A
+B(3)
POWER
CEI
DATA I/O
CL
CEO
D.GND
CN902A
DATA IN
CE
CEI
CEO
HALT
SD
ST
DPL
D.REC
CS
CD REC
CD GM
POWER
MUTE
STB
ENABLE
To A TUNER CIRCUIT (CN101B) on pages 9,12,15,17
To A TUNER CIRCUIT (CN102B) on pages 9,12,15,17
To A TUNER CIRCUIT (CN501B) on pages 9,12
To B OPERATION CIRCUIT (CN902B) on page 19

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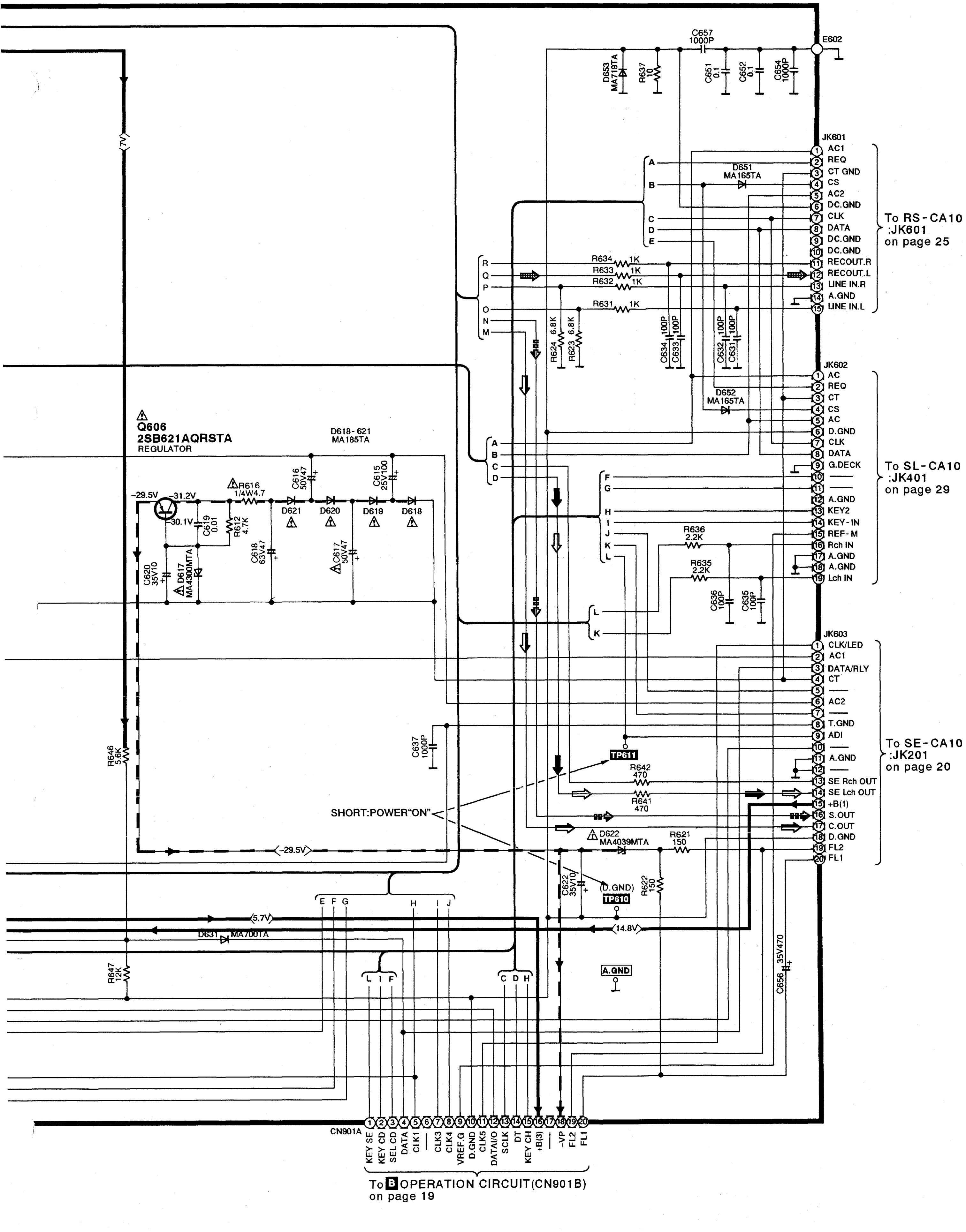
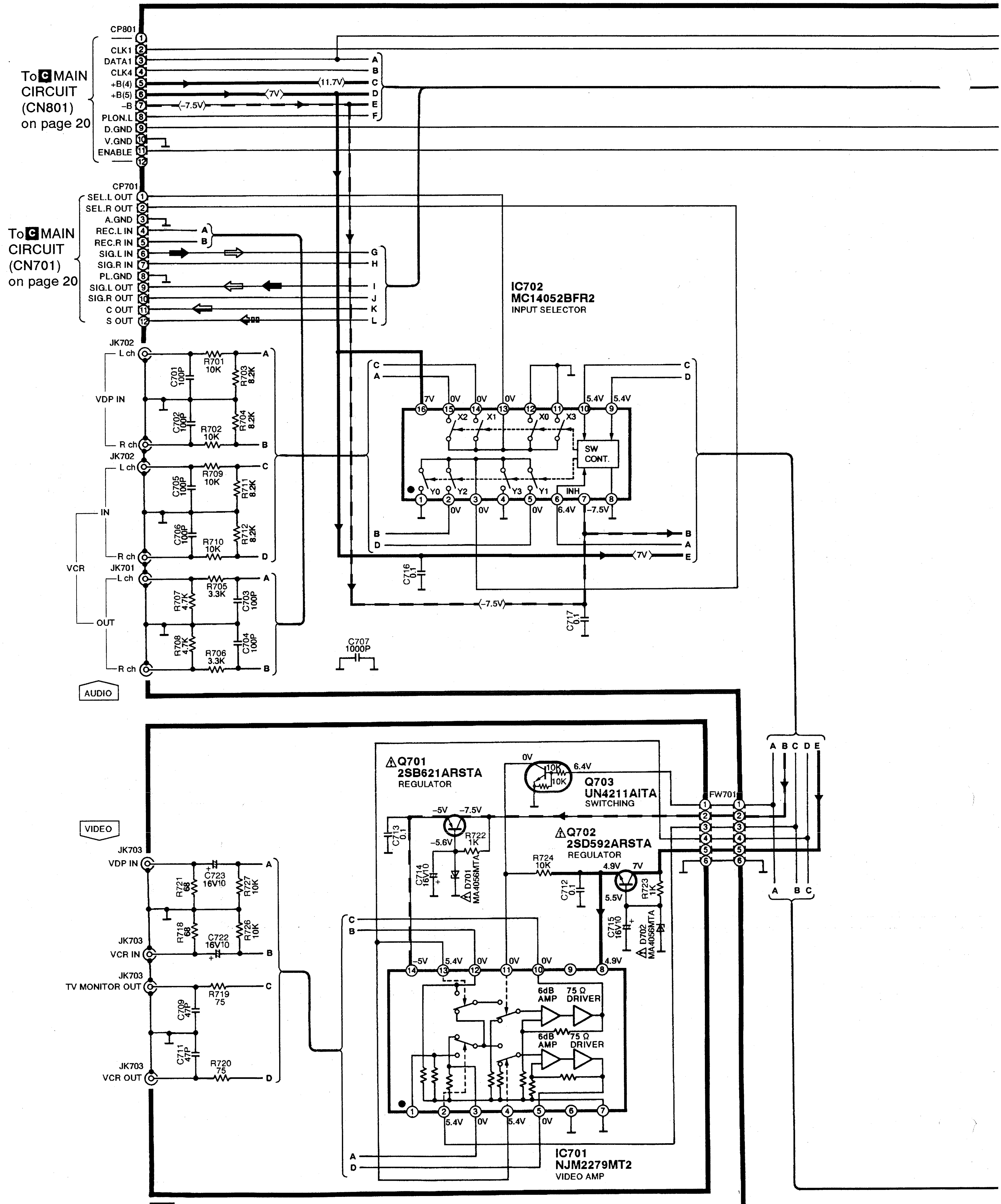
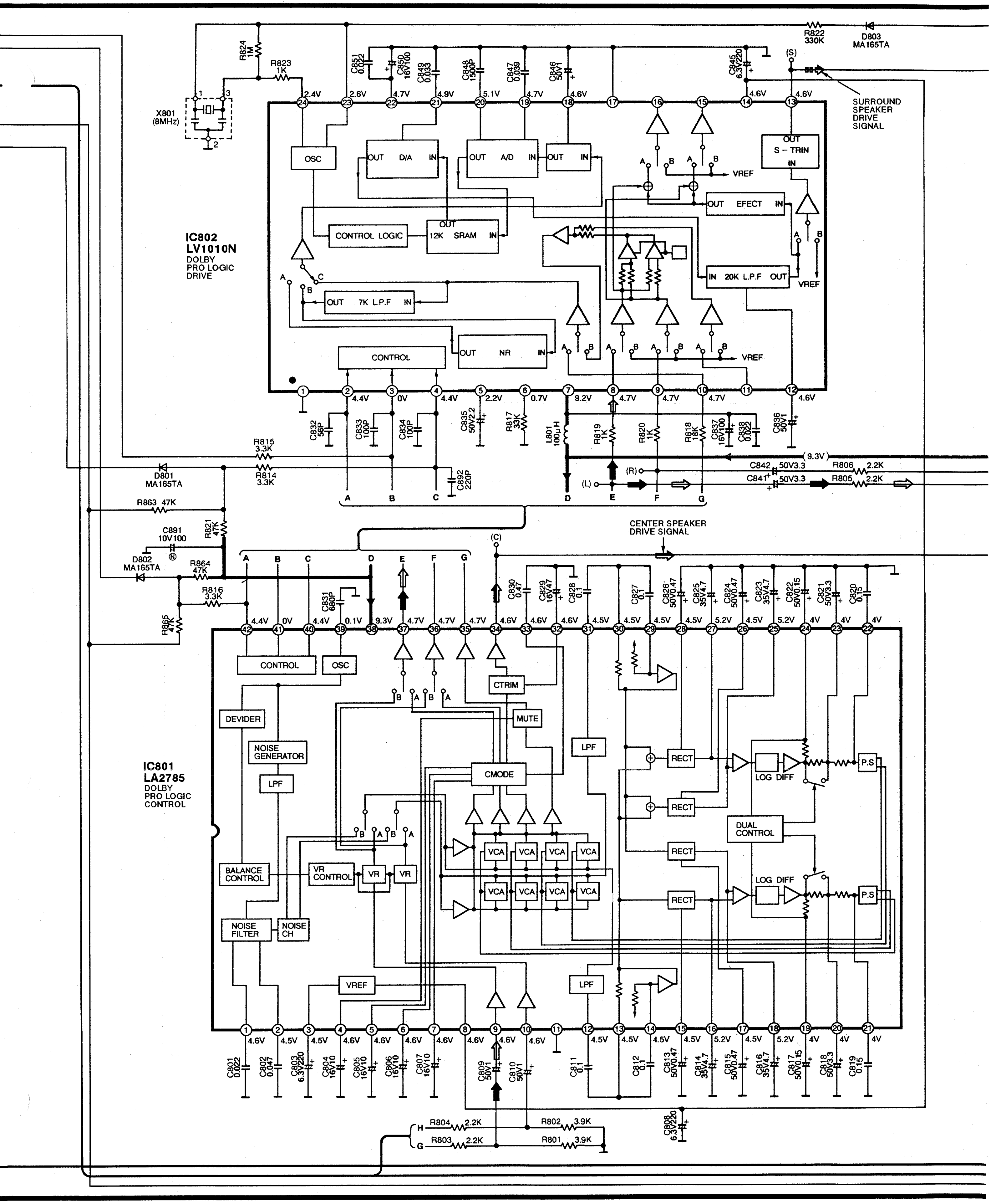

E602
C657 1000P
D653 MA719TA
R637 10
C651 0.1
C652 0.1
C654 1000P
JK601
① AC1
② REQ
③ CT GND
④ CS
⑤ AC2
⑥ DC.GND
⑦ CLK
⑧ DATA
⑨ DC.GND
⑩ DC.GND
⑪ RECOUT.R
⑫ RECOUT.L
⑬ LINE IN.R
⑭ A.GND
⑮ LINE IN.L
To RS-CA10 :JK601 on page 25
D651 MA165TA
R634 1K
R633 1K
R632 1K
R631 1K
R624 6.8K
R623 6.8K
C634 100P
C633 100P
C632 100P
C631 100P
JK602
① AC
② REQ
③ CT
④ CS
⑤ AC
⑥ D.GND
⑦ CLK
⑧ DATA
⑨ G.DECK
⑩ —
⑪ —
⑫ A.GND
⑬ KEY2
⑭ KEY-IN
⑮ REF-M
⑯ Rch IN
⑰ A.GND
⑱ A.GND
⑲ Lch IN
To SL-CA10 :JK401 on page 29
D652 MA165TA
Q606 2SB621AQRSTA REGULATOR
D618-621 MA185TA
R616 1/4W4.7
C616 50V47
C615 25V100
-29.5V
-31.2V
-30.1V
C619 0.01
R612 4.7K
D621
D620
D619
D618
C618 63V47
C617 50V47
C620 35V10
D617 MA4300MTA
R636 2.2K
R635 2.2K
C636 100P
C635 100P
JK603
① CLK/LED
② AC1
③ DATA/RLY
④ CT
⑤ —
⑥ AC2
⑦ —
⑧ T.GND
⑨ ADI
⑩ —
⑪ A.GND
⑫ —
⑬ SE Rch OUT
⑭ SE Lch OUT
⑮ +B(1)
⑯ S.OUT
⑰ C.OUT
⑱ D.GND
⑲ FL2
⑳ FL1
To SE-CA10 :JK201 on page 20
(7V)
R646 5.6K
C637 1000P
TP611
R642 470
R641 470
SHORT:POWER"ON"
D622 MA4039MTA
R621 150
(-29.5V)
C622 35V10
(D.GND) TP610
R622 150
(5.7V)
D631 MA700TA
(14.8V)
R647 12K
C656 35V470
A.GND
CN901A
① KEY SE
② KEY CD
③ SEL CD
④ DATA
⑤ CLK1
⑥ —
⑦ CLK3
⑧ CLK4
⑨ VREF.G
⑩ D.GND
⑪ CLK5
⑫ DATA I/O
⑬ SCLK
⑭ DT
⑮ KEY CH
⑯ +B(3)
⑰ —
⑱ -VP
⑲ FL2
⑳ FL1
To B OPERATION CIRCUIT(CN901B) on page 19

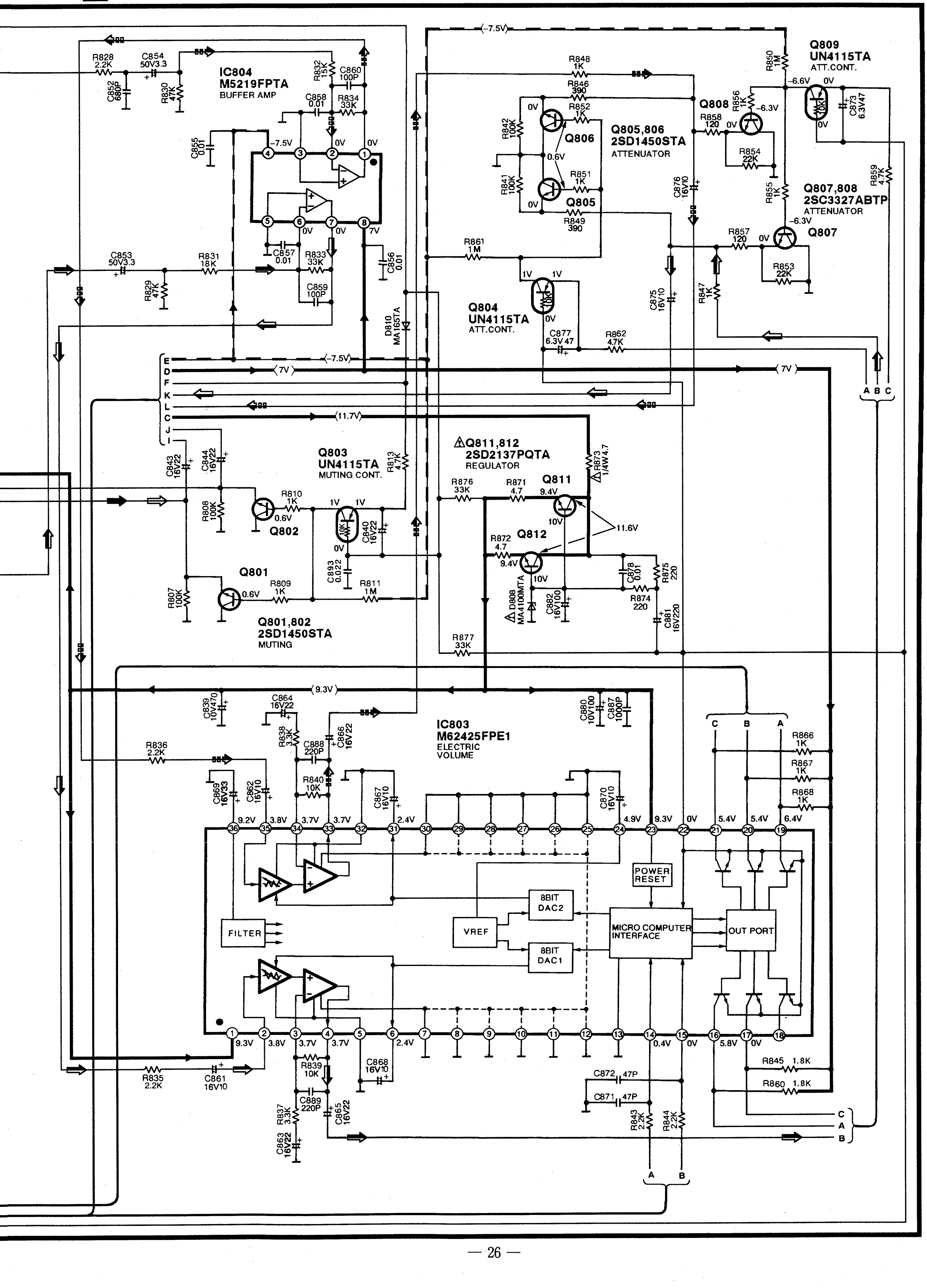
## D DOLBY PRO LOGIC CIRCUIT (P.C.Board:on page 30)


CP801
CLK1
DATA1
CLK4
+B(4)
+B(5)
-B
PLON.L
D.GND
V.GND
ENABLE
To C MAIN CIRCUIT (CN801) on page 20
11.7V
7V
-7.5V
CP701
SEL.L OUT
SEL.R OUT
A.GND
REC.L IN
REC.R IN
SIG.L IN
SIG.R IN
PL.GND
SIG.L OUT
SIG.R OUT
C OUT
S OUT
To C MAIN CIRCUIT (CN701) on page 20
IC702
MC14052BFR2
INPUT SELECTOR
SW CONT.
INH
X0
X1
X2
X3
Y0
Y1
Y2
Y3
5.4V
6.4V
0V
JK702
L ch
R ch
VDP IN
IN
OUT
VCR
JK701
C701 100P
C702 100P
R701 10K
R702 10K
R703 8.2K
R704 8.2K
C705 100P
C706 100P
R709 10K
R710 10K
R711 8.2K
R712 8.2K
R705 3.3K
R706 3.3K
R707 4.7K
R708 4.7K
C703 100P
C704 100P
C716 0.1
C717 0.1
C707 1000P
AUDIO
VIDEO
JK703
VDP IN
VCR IN
TV MONITOR OUT
VCR OUT
R721 68
R718 68
C723 16V10
C722 16V10
R727 10K
R726 10K
R719 75
R720 75
C709 47P
C711 47P
Q701
2SB621ARSTA
REGULATOR
Q703
UN4211AITA
SWITCHING
Q702
2SD592ARSTA
REGULATOR
-5V
-5.6V
C713 0.1
C714 16V10
R722 1K
D701 MA4056MTA
R724 10K
C712 0.1
4.9V
5.5V
R723 1K
C715 16V10
D702 MA4056MTA
10K
FW701
A B C D E
6dB AMP
75 Ω DRIVER
IC701
NJM2279MT2
VIDEO AMP

## E VIDEO CIRCUIT (P.C.Board:on page 28)


IC802
LV1010N
DOLBY
PRO LOGIC
DRIVE
IC801
LA2785
DOLBY
PRO LOGIC
CONTROL
X801
(8MHz)
R824 1M
R823 1K
R822 330K
D803 MA165TA
SURROUND
SPEAKER
DRIVE
SIGNAL
CENTER SPEAKER
DRIVE SIGNAL
C851 0.022
C850 16V100
C849 0.033
C848 1500P
C847 0.039
C846 50V1
C845 6.3V220
OSC
OUT D/A IN
OUT A/D IN
OUT IN
OUT S-TRIN IN
OUT EFECT IN
CONTROL LOGIC
OUT 12K SRAM IN
OUT 7K L.P.F IN
IN 20K L.P.F OUT
OUT NR IN
CONTROL
VREF
C832 56P
C833 100P
C834 100P
C835 50V2.2
R817 33K
L801 100μH
R819 1K
R820 1K
R818 18K
C837 16V100
C838 0.022
C836 50V1
C892 220P
R815 3.3K
R814 3.3K
D801 MA165TA
R863 47K
R821 47K
C891 10V100
D802 MA165TA
R864 47K
R816 3.3K
R865 47K
(9.3V)
C842 50V3.3
C841 50V3.3
R806 2.2K
R805 2.2K
(R)
(L)
(S)
(C)
A B C D E F G
C831 680P
C830 0.47
C829 16V47
C828 0.1
C827 0.1
C826 50V0.47
C825 35V4.7
C824 50V0.47
C823 35V4.7
C822 50V0.15
C821 50V3.3
C820 0.15
CONTROL
OSC
DEVIDER
NOISE GENERATOR
LPF
CTRIM
MUTE
CMODE
BALANCE CONTROL
VR CONTROL
VR
VCA
NOISE FILTER
NOISE CH
VREF
RECT
LOG DIFF
P.S
DUAL CONTROL
C801 0.022
C802 0.047
C803 6.3V220
C804 16V10
C805 16V10
C806 16V10
C807 16V10
C809 50V1
C810 50V1
C811 0.1
C812 0.1
C813 50V0.47
C814 35V4.7
C815 50V0.47
C816 35V4.7
C817 50V0.15
C818 50V3.3
C819 0.15
C808 6.3V220
R804 2.2K
R803 2.2K
R802 3.9K
R801 3.9K
H
G

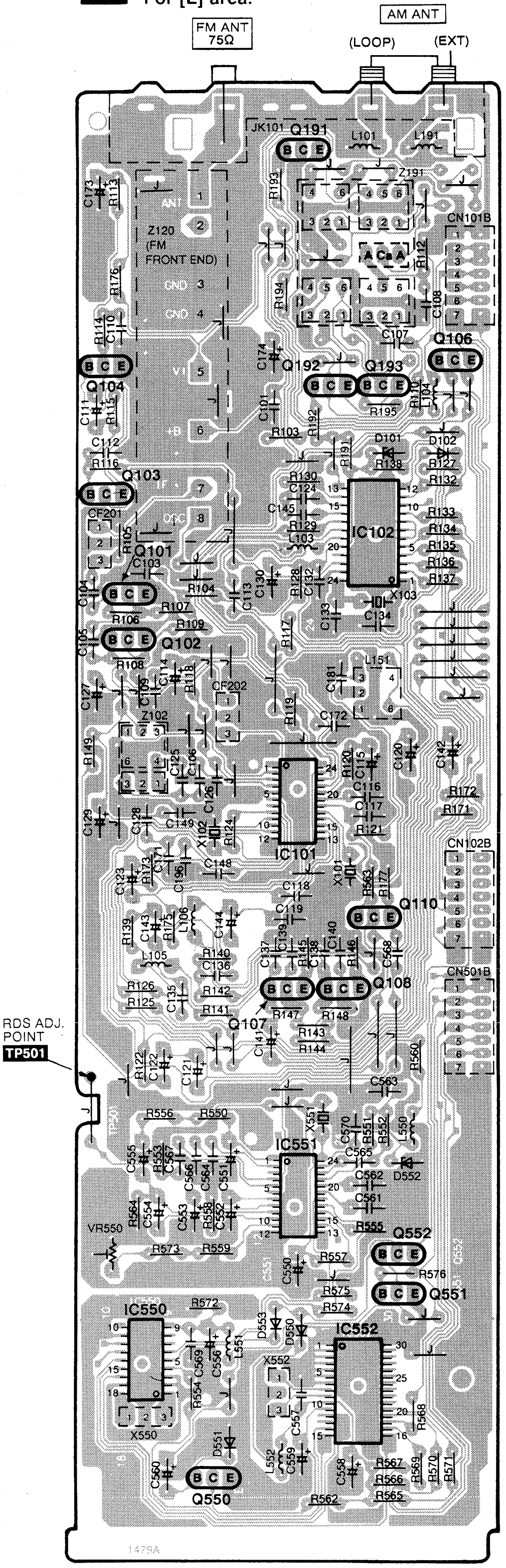
## D DOLBY PRO LOGIC CIRCUIT (P.C.Board:on page 30)


IC804
M5219FPTA
BUFFER AMP
R828 2.2K
C854 50V3.3
C852 680P
R830 47K
R832 15K
C860 100P
C858 0.01
R834 33K
C855 0.01
-7.5V
0V
C857 0.01
R833 33K
C859 100P
C856 0.01
7V
C853 50V3.3
R831 18K
R829 47K
D810 MA165TA
Q809
UN4115TA
ATT.CONT.
R850 1M
-6.6V
C873 6.3V47
R848 1K
R846 390
R852 1K
R842 100K
Q806
Q805,806
2SD1450STA
ATTENUATOR
0.6V
R851 1K
R841 100K
Q805
R849 390
Q808
R856 1K
R858 120
-6.3V
R854 22K
R855 1K
Q807,808
2SC3327ABTP
ATTENUATOR
R859 4.7K
C876 16V10
R861 1M
R857 120
Q807
R853 22K
Q804
UN4115TA
ATT.CONT.
1V
C877 6.3V 47
R862 4.7K
C875 16V10
R847 1K
E
D
F
K
L
C
J
I
-7.5V
7V
11.7V
A B C
C843 16V22
C844 16V22
Q803
UN4115TA
MUTING CONT.
R813 4.7K
ΔQ811,812
2SD2137PQTA
REGULATOR
R873 1/4W4.7
R810 1K
R808 100K
Q802
C840 16V22
R876 33K
R871 4.7
Q811
9.4V
10V
11.6V
R872 4.7
Q812
C878 0.01
R875 220
C893 0.022
R807 100K
Q801
R809 1K
R811 1M
ΔD808 MA4100MTA
C882 16V100
R874 220
C881 16V220
Q801,802
2SD1450STA
MUTING
R877 33K
9.3V
C839 10V470
C864 16V22
R838 3.3K
C888 220P
C866 16V22
IC803
M62425FPE1
ELECTRIC
VOLUME
C880 10V100
C887 1000P
R836 2.2K
R840 10K
C869 16V33
C862 16V10
C867 16V10
C870 16V10
R866 1K
R867 1K
R868 1K
9.2V
3.8V
3.7V
2.4V
4.9V
0V
5.4V
6.4V
POWER RESET
8BIT DAC2
FILTER
VREF
MICRO COMPUTER INTERFACE
OUT PORT
8BIT DAC1
0.4V
5.8V
R835 2.2K
C861 16V10
R839 10K
C868 16V10
C889 220P
C865 16V22
R837 3.3K
C863 16V22
C872 47P
C871 47P
R843 2.2K
R844 2.2K
R845 1.8K
R860 1.8K
A
B

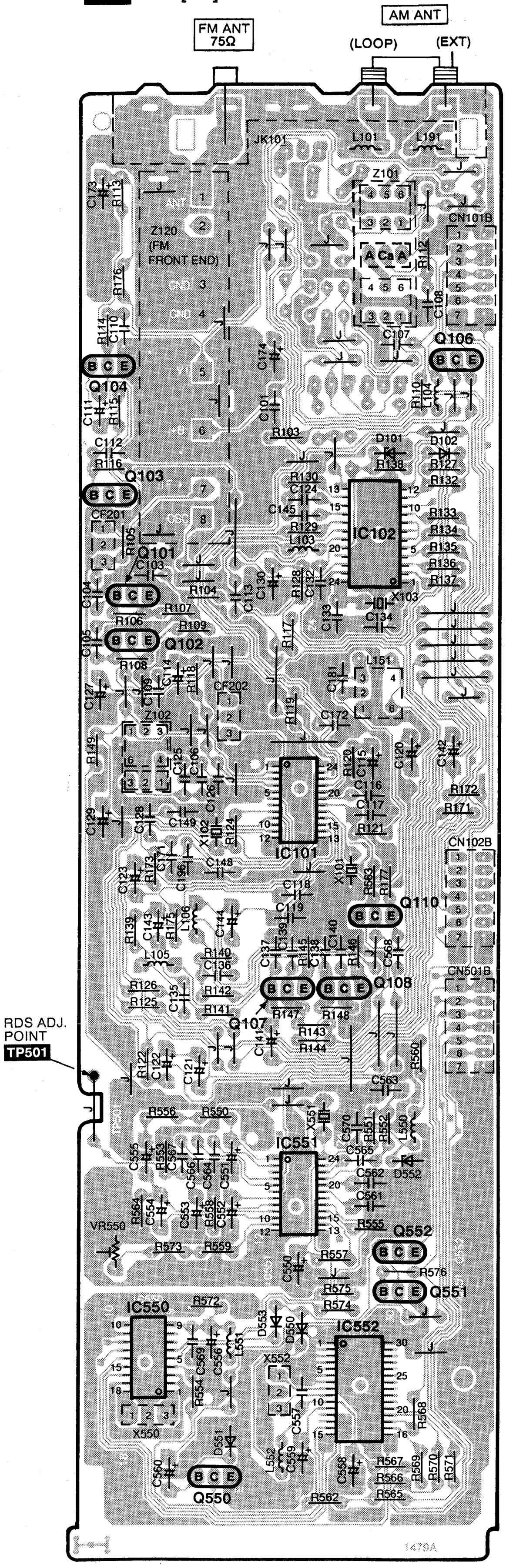
# PRINTED CIRCUIT BOARD DIAGRAM

- This circuit board diagram may be modified at any time with the development of new technology.

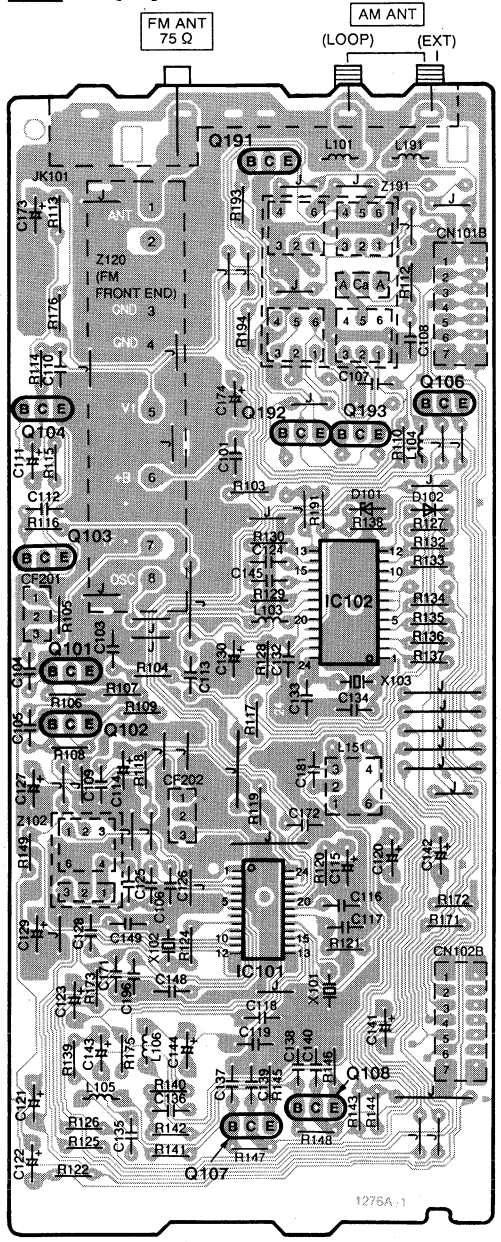
**A** **TUNER P.C.B. (REP2151B–T)**
**For [E] area.**


FM ANT 75Ω
AM ANT
(LOOP)
(EXT)
JK101
Q191
L101
L191
Z191
Z120 (FM FRONT END)
CN101B
Q104
Q106
Q192
Q193
Q103
Q101
Q102
IC102
X103
L151
CF201
CF202
Z102
IC101
CN102B
Q110
Q107
Q108
CN501B
RDS ADJ. POINT
TP501
IC551
VR550
Q552
Q551
IC550
IC552
X550
X552
Q550
1479A

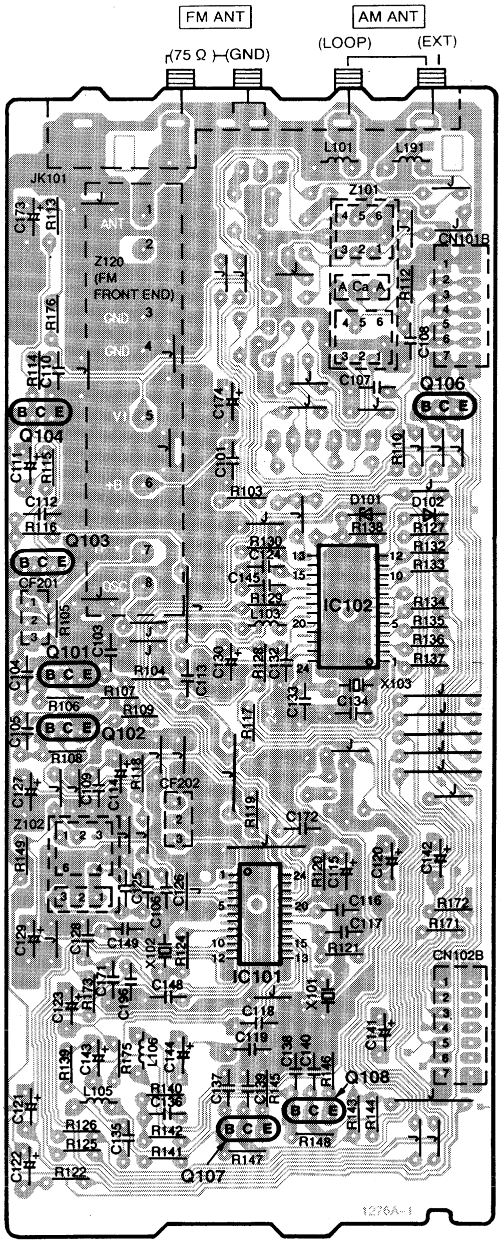
**A** **TUNER P.C.B. (REP2151A–T)**
**For [EG] area.**


FM ANT 75Ω
AM ANT
(LOOP)
(EXT)
JK101
L101
L191
Z101
Z120 (FM FRONT END)
CN101B
Q104
Q106
Q103
Q101
Q102
IC102
X103
L151
CF201
CF202
Z102
IC101
CN102B
Q110
Q107
Q108
CN501B
RDS ADJ. POINT
TP501
IC551
VR550
Q552
Q551
IC550
IC552
X550
X552
Q550
1479A

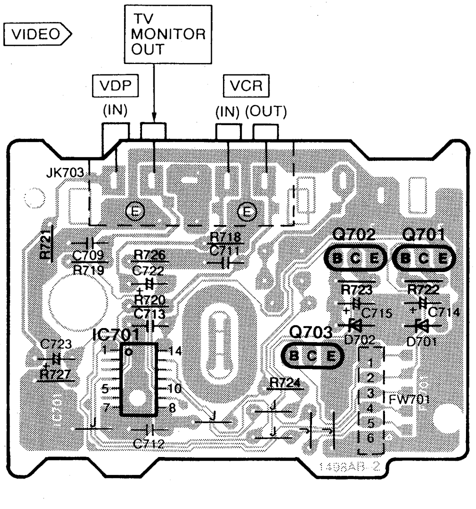
## A TUNER P.C.B. (REP1930F–T)
For [EB] area.


FM ANT 75 Ω
AM ANT
(LOOP)
(EXT)
JK101
Z120 (FM FRONT END)
ANT
GND
VT
+B
OSC
Z191
CN101B
Q191
Q192
Q193
Q104
Q106
Q103
Q101
Q102
IC102
IC101
CF201
CF202
Z102
L151
X101
X102
X103
CN102B
Q108
Q107
1276A-1

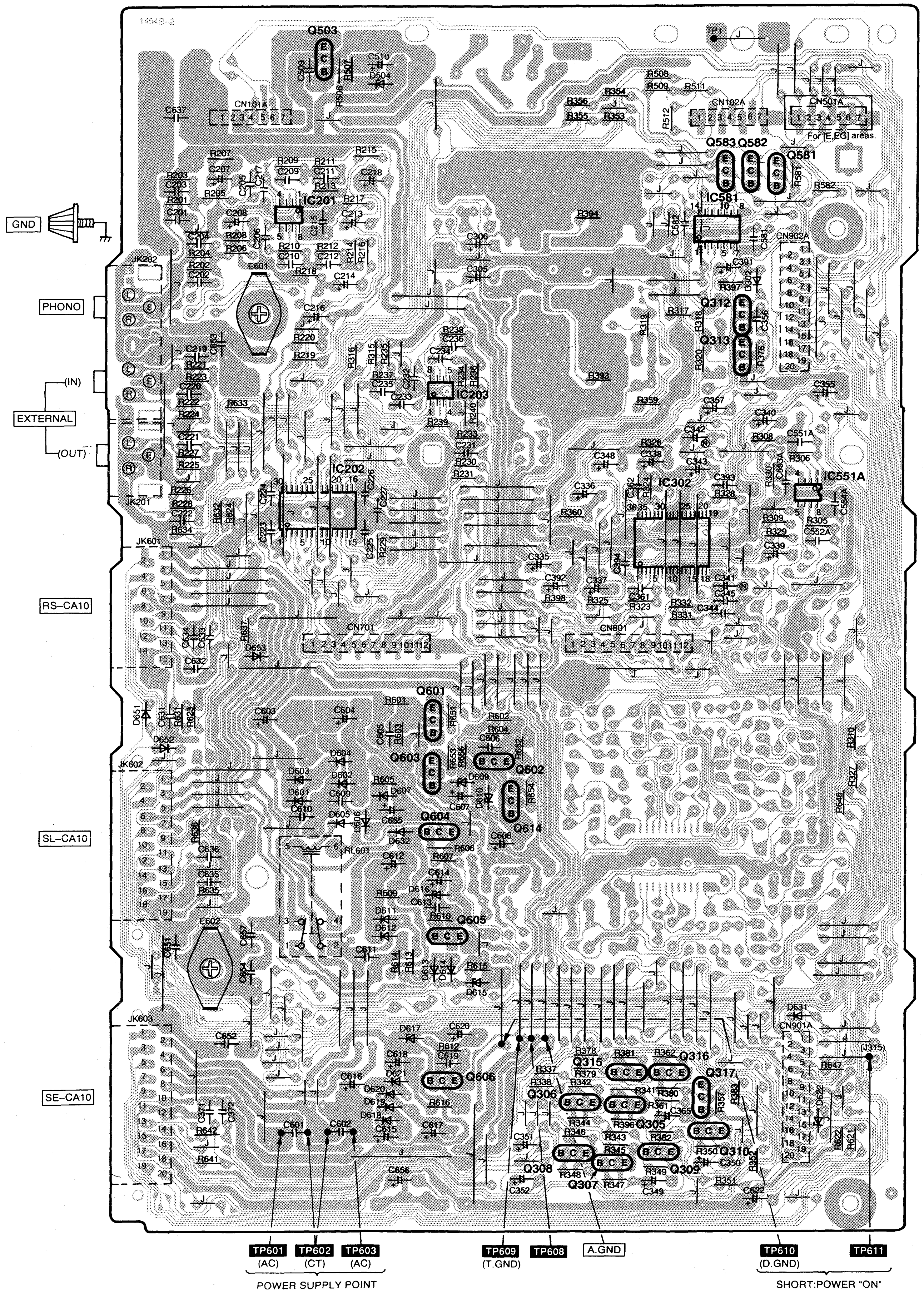
## A TUNER P.C.B. (REP1930E–T)
For [GC] area.


FM ANT
(75 Ω)
(GND)
AM ANT
(LOOP)
(EXT)
JK101
Z120 (FM FRONT END)
ANT
GND
VT
+B
OSC
Z101
CN101B
Q104
Q106
Q103
Q101
Q102
IC102
IC101
CF201
CF202
Z102
X101
X102
X103
CN102B
Q108
Q107
1276A-1

## E VIDEO P.C.B. (REP2172A–T)

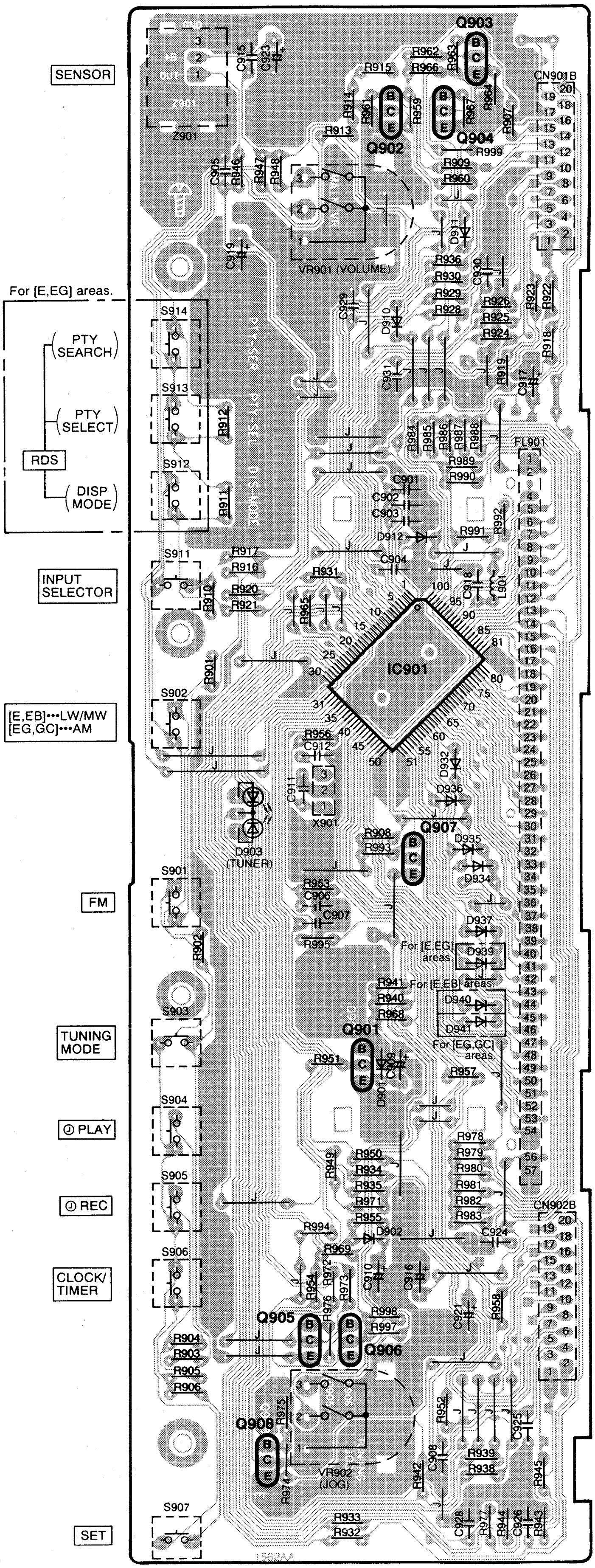

VIDEO
TV MONITOR OUT
VDP
(IN)
VCR
(IN) (OUT)
JK703
Q702
Q701
Q703
IC701
D701
D702
FW701
1498AB-2

## C MAIN P.C.B. (REP2289C-M•••[E,EG] REP2289D-M•••[EB,GC])

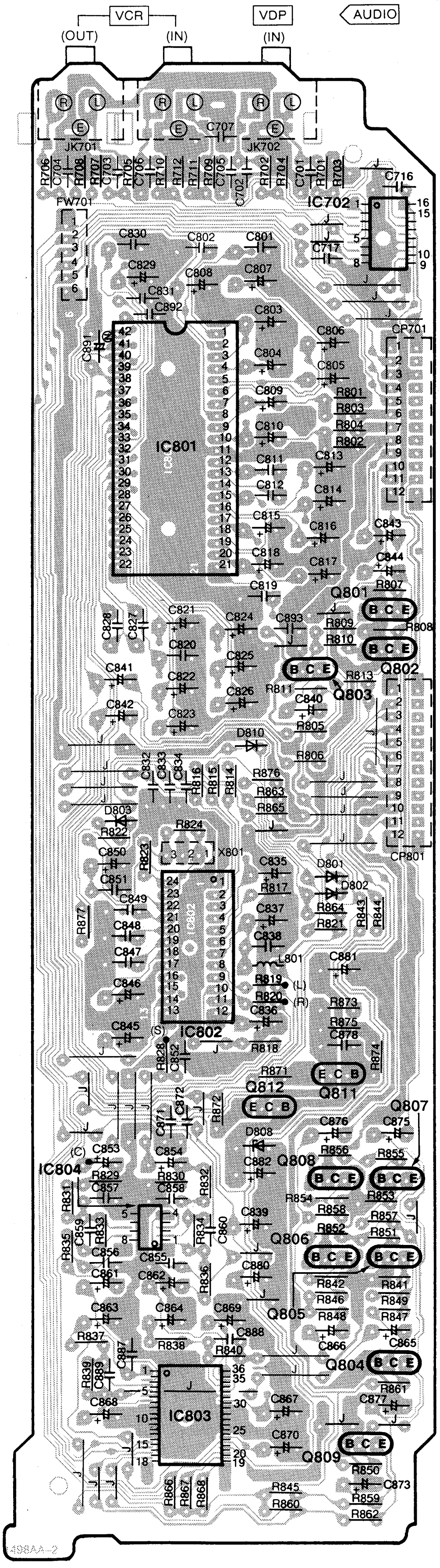

1454B-2
Q503
CN101A
C637
TP1
CN102A
CN501A
For [E,EG] areas.
Q583 Q582 Q581
IC581
IC201
GND
JK202
PHONO
E601
CN902A
Q312
Q313
EXTERNAL
(IN)
(OUT)
IC203
IC202
IC302
IC551A
JK201
JK601
RS-CA10
CN701
CN801
Q601
Q603
Q602
Q614
Q604
RL601
JK602
SL-CA10
E602
Q605
JK603
SE-CA10
Q606
Q315
Q316
Q317
Q306
Q305
Q308
Q307
Q309
Q310
CN901A
(J315)
TP601
(AC)
TP602
(CT)
TP603
(AC)
POWER SUPPLY POINT
TP609
(T.GND)
TP608
A.GND
TP610
(D.GND)
TP611
SHORT:POWER "ON"

## B OPERATION P.C.B.

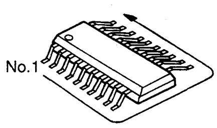
REP2290D–S···[E]
REP2290E–S···[EG]
REP2290F–S···[GC]
REP2290J–S···[EB]


SENSOR
For [E,EG] areas.
PTY SEARCH
PTY SELECT
RDS
DISP MODE
INPUT SELECTOR
[E,EB]···LW/MW
[EG,GC]···AM
FM
TUNING MODE
⊙ PLAY
⊙ REC
CLOCK/ TIMER
SET
Z901
S914
S913
S912
S911
S902
S901
S903
S904
S905
S906
S907
Q903
Q902
Q904
Q907
Q901
Q905
Q906
Q908
CN901B
CN902B
FL901
IC901
X901
D903 (TUNER)
VR901 (VOLUME)
VR902 (JOG)
For [E,EG] areas.
For [E,EB] areas.
For [EG,GC] areas.
1562AA

## D DOLBY PRO LOGIC P.C.B.
(REP2172A–T)

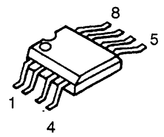

VCR
(OUT)
(IN)
VDP
(IN)
AUDIO
JK701
JK702
FW701
IC702
CP701
IC801
IC802
IC803
IC804
X801
CP801
Q801
Q802
Q803
Q804
Q805
Q806
Q807
Q808
Q809
Q811
Q812
498AA-2

## ● Terminal guide of IC's transistors and diodes

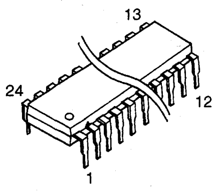


| | | | |
|---|---|---|---|
| AN6558SFE2 | 8PIN | LA2230M-TE-L | 24PIN |
| M5219FPTA | 8PIN | LC7218M-TE-L | 24PIN |
| MC14066BFEL | 14PIN | LC65104A4F75 | 30PIN |
| MC14052BFR2 | 16PIN | NJU7313AMT2 | 30PIN |
| NJM2279MT2 | 16PIN | M62425FPE1 | 36PIN |
| LC7073M-TLM | 18PIN | | |
| LA1832MH-TEL | 24PIN | | |

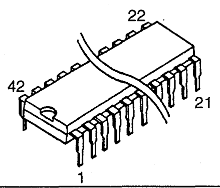
BA4558FDXT1



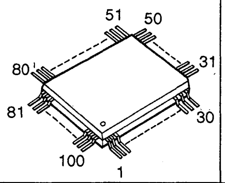
LV1010N

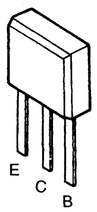


LA2785



M38198MC064F

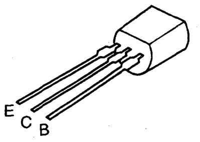

51
50
80
31
81
30
100
1



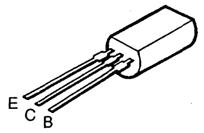
2SA1309AQSTA
2SC2785FETA
2SC2787LTA
2SC3311AQSTA
2SC3311ARSTA
2SD1450STA
UN411FTA
UN4111AITA

UN4115TA
UN4119TA
UN4211AITA
UN4214AITA

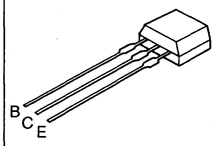
2SB621AQRSTA
2SB621ARSTA
2SD592ARSTA



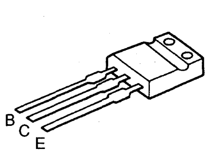
2SA1534AQRTA
2SC3940AQSTA



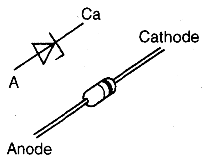
2SD2144STA
2SC3327ABTP

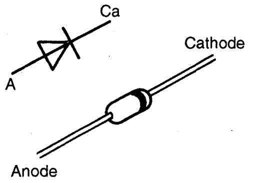


2SD2137PQTA



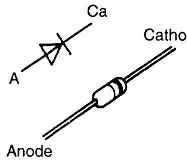
MA4100MTA
MA4300MTA

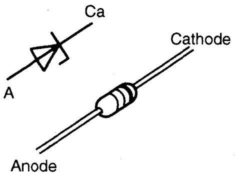

Ca
Cathode
A
Anode


Ca
Cathode
A
Anode

1SS291TA
MA165TA
MA700TA

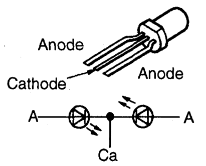
MA185TA
MA719TA


Ca
Cathode
A
Anode

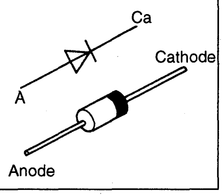

Ca
Cathode
A
Anode

MA4039MTA
MA4051MTA
MA4056MTA
MA4062HTA
MA4075HTA
MA4082LTA
MA4082MTA

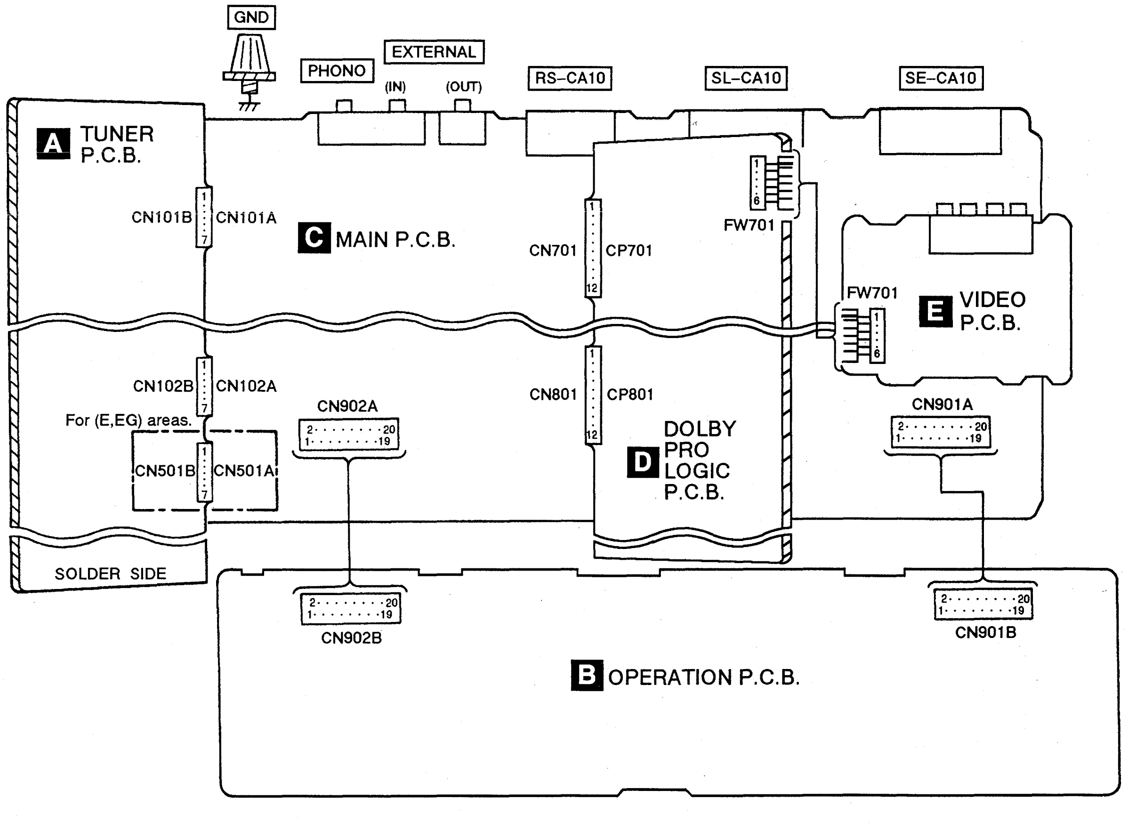
SPR505MDTT


Anode
Anode
Cathode
A
A
Ca

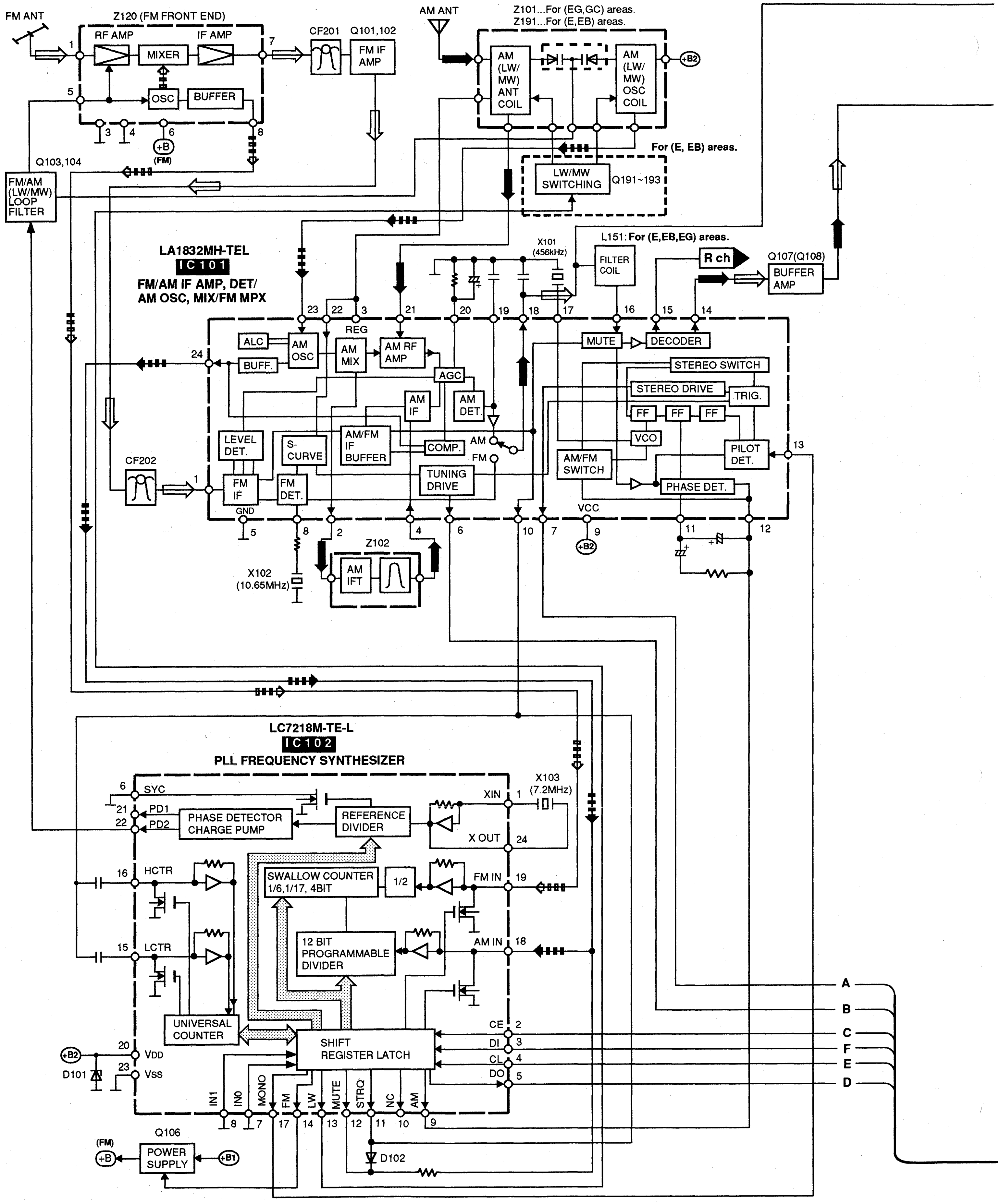
RL1N4003N02


Ca
Cathode
A
Anode

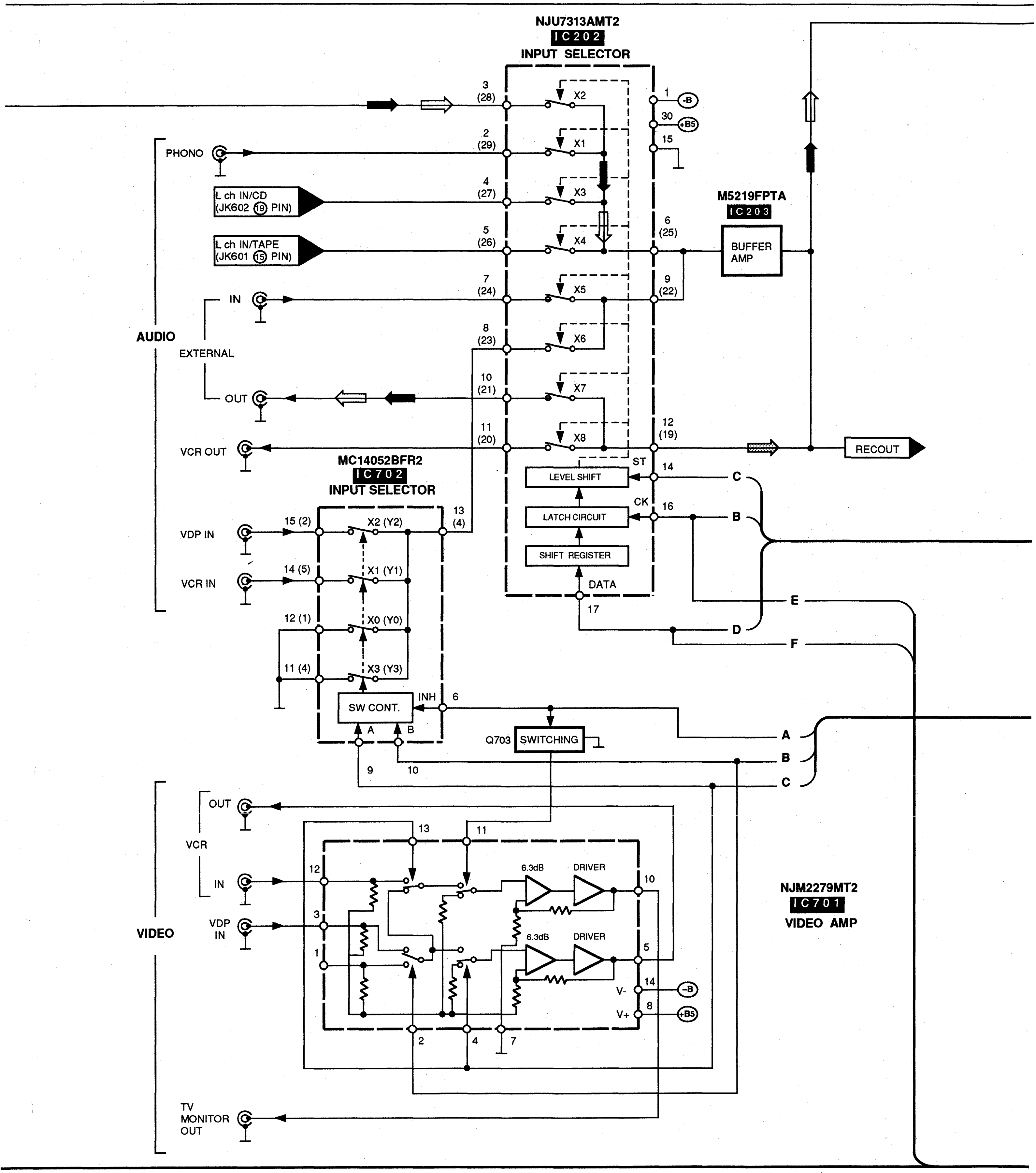
## ■ WIRING CONNECTION DIAGRAM


GND
PHONO
EXTERNAL
(IN)
(OUT)
RS–CA10
SL–CA10
SE–CA10
A TUNER P.C.B.
CN101B
CN101A
C MAIN P.C.B.
CN701
CP701
FW701
FW701
E VIDEO P.C.B.
CN102B
CN102A
For (E,EG) areas.
CN501B
CN501A
CN902A
CN801
CP801
D DOLBY PRO LOGIC P.C.B.
CN901A
SOLDER SIDE
CN902B
CN901B
B OPERATION P.C.B.

# BLOCK DIAGRAM


FM ANT
Z120 (FM FRONT END)
RF AMP
MIXER
IF AMP
OSC
BUFFER
CF201
Q101,102
FM IF AMP
(+B) (FM)
Q103,104
FM/AM (LW/MW) LOOP FILTER
AM ANT
Z101...For (EG,GC) areas.
Z191...For (E,EB) areas.
AM (LW/ MW) ANT COIL
AM (LW/ MW) OSC COIL
+B2
For (E, EB) areas.
LW/MW SWITCHING
Q191~193
LA1832MH-TEL
IC101
FM/AM IF AMP, DET/ AM OSC, MIX/FM MPX
X101 (456kHz)
L151: For (E,EB,EG) areas.
FILTER COIL
R ch
Q107(Q108)
BUFFER AMP
REG
ALC
AM OSC
BUFF.
AM MIX
AM RF AMP
AGC
AM IF
AM DET.
MUTE
DECODER
STEREO SWITCH
STEREO DRIVE
TRIG.
FF
FF
FF
VCO
PILOT DET.
PHASE DET.
AM/FM SWITCH
LEVEL DET.
S-CURVE
AM/FM IF BUFFER
COMP.
AM
FM
TUNING DRIVE
FM IF
FM DET.
GND
VCC
CF202
Z102
AM IFT
X102 (10.65MHz)
LC7218M-TE-L
IC102
PLL FREQUENCY SYNTHESIZER
SYC
PD1
PD2
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
XIN
X OUT
X103 (7.2MHz)
HCTR
LCTR
SWALLOW COUNTER 1/6,1/17, 4BIT
1/2
FM IN
AM IN
12 BIT PROGRAMMABLE DIVIDER
UNIVERSAL COUNTER
SHIFT REGISTER LATCH
CE
DI
CL
DO
VDD
VSS
D101
IN1
IN0
MONO
FM
LW
MUTE
STRQ
NC
AM
D102
Q106
POWER SUPPLY
(FM) +B
+B1
A
B
C
F
E
D

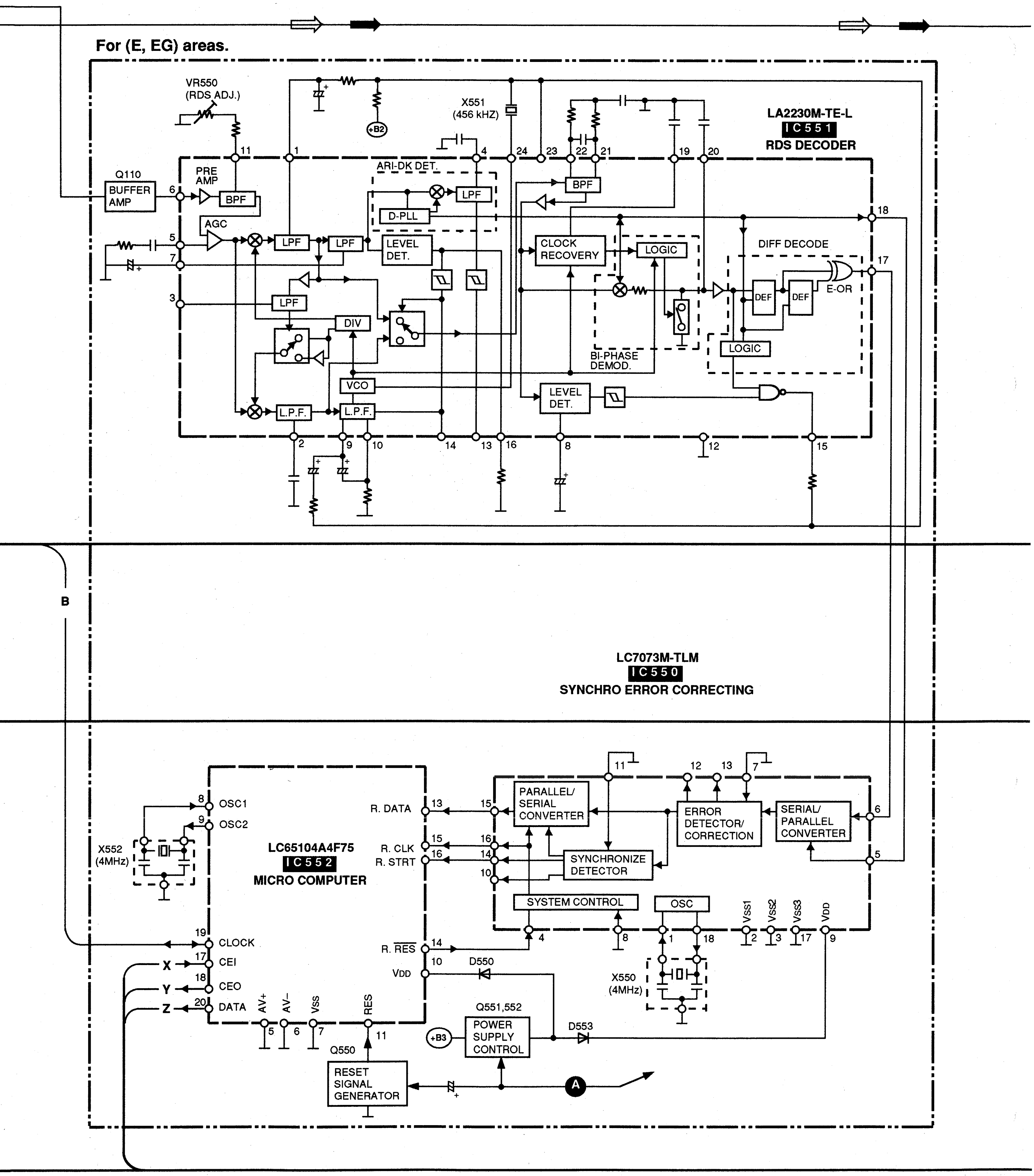
• Signal line ⇨ : FM signal ▯▯▯⇨ : FM OSC signal ➡ : AM signal ▮▮▮➡ : AM OSC signal
▨⇨ : Rec out signal ⇨ : Center speaker drive signal ▮▮⇨ : Sourround speaker drive signal



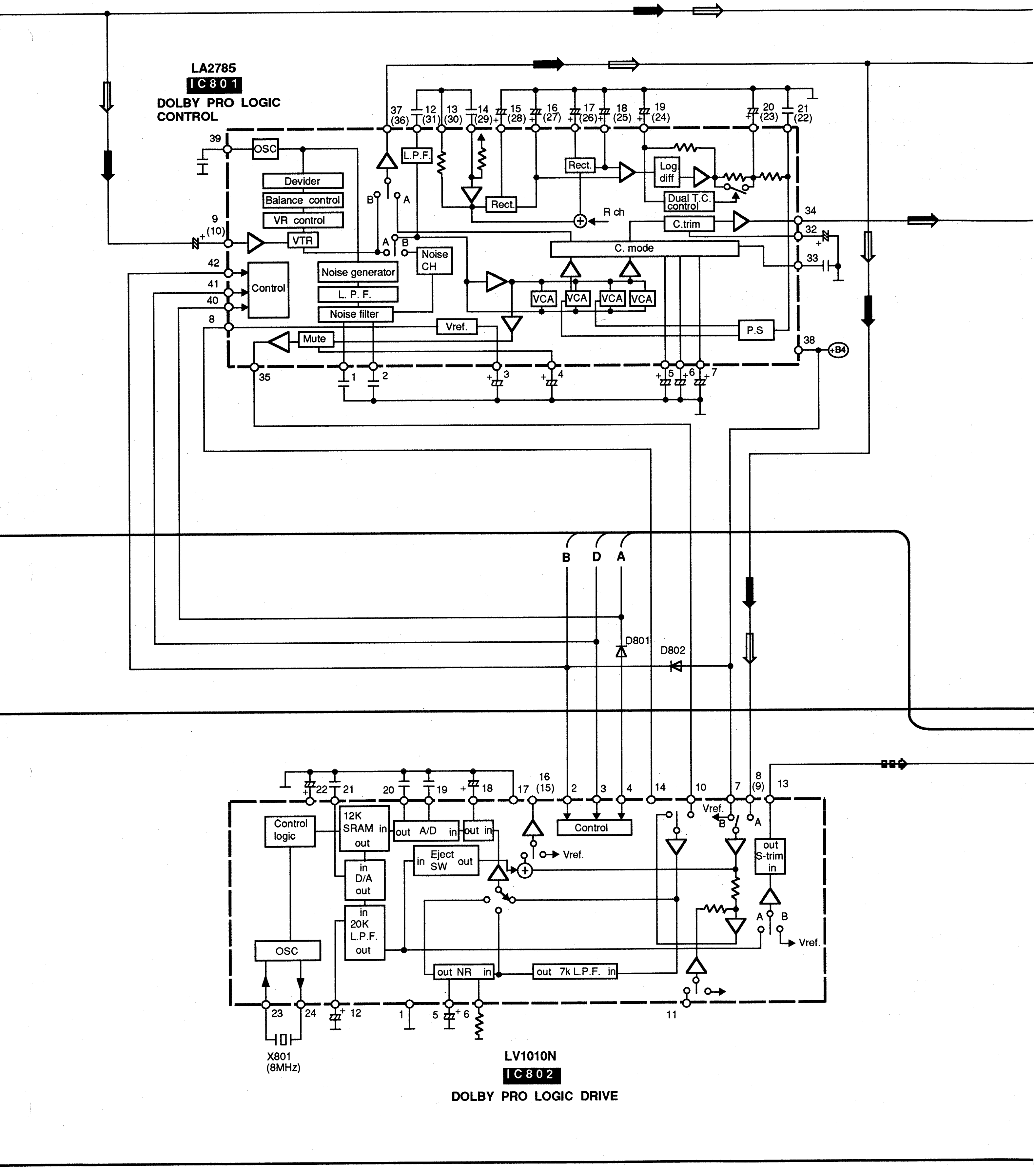
NJU7313AMT2
IC202
INPUT SELECTOR
3 (28)
X2
2 (29)
X1
PHONO
4 (27)
X3
L ch IN/CD (JK602 ⑲ PIN)
5 (26)
X4
L ch IN/TAPE (JK601 ⑮ PIN)
7 (24)
X5
IN
AUDIO
8 (23)
X6
EXTERNAL
10 (21)
X7
OUT
11 (20)
X8
VCR OUT
1
-B
30
+B5
15
6 (25)
9 (22)
12 (19)
M5219FPTA
IC203
BUFFER AMP
RECOUT
ST
14
LEVEL SHIFT
CK
16
LATCH CIRCUIT
SHIFT REGISTER
DATA
17
C
B
E
D
F
MC14052BFR2
IC702
INPUT SELECTOR
13 (4)
15 (2)
X2 (Y2)
VDP IN
14 (5)
X1 (Y1)
VCR IN
12 (1)
X0 (Y0)
11 (4)
X3 (Y3)
SW CONT.
INH
6
A
B
9
10
Q703
SWITCHING
A
B
C
OUT
VCR
IN
VIDEO
VDP IN
13
11
12
3
1
6.3dB
DRIVER
10
6.3dB
DRIVER
5
14
V-
-B
8
V+
+B5
2
4
7
NJM2279MT2
IC701
VIDEO AMP
TV MONITOR OUT

- Signal line ⇨ : FM signal ▯▯▯▷ : FM OSC signal ➡ : AM signal ▮▮▮▶ : AM OSC signal
▨ : Rec out signal ⇨ : Center speaker drive signal ▪▪▶ : Sourround speaker drive signal

For (E, EG) areas.

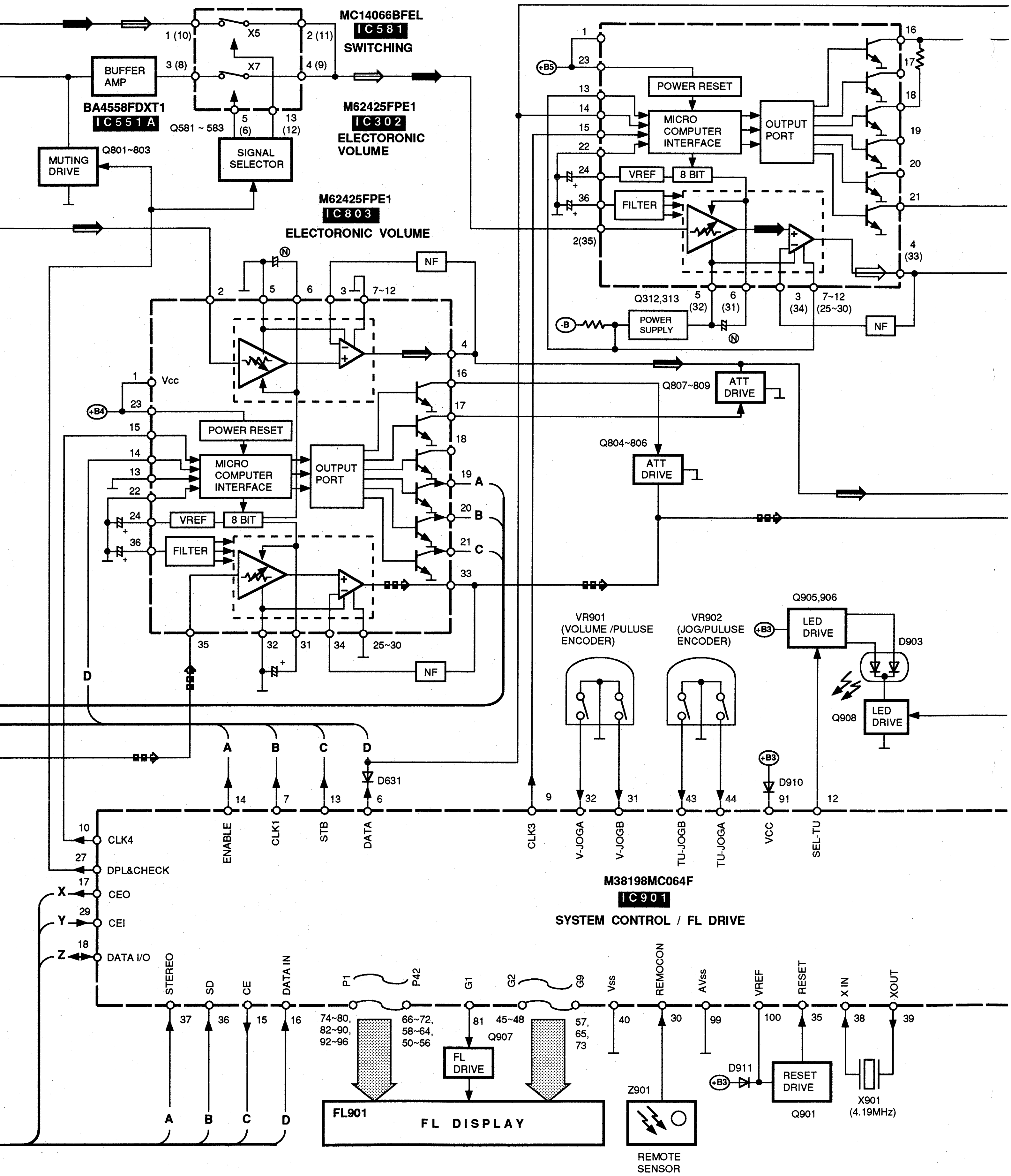


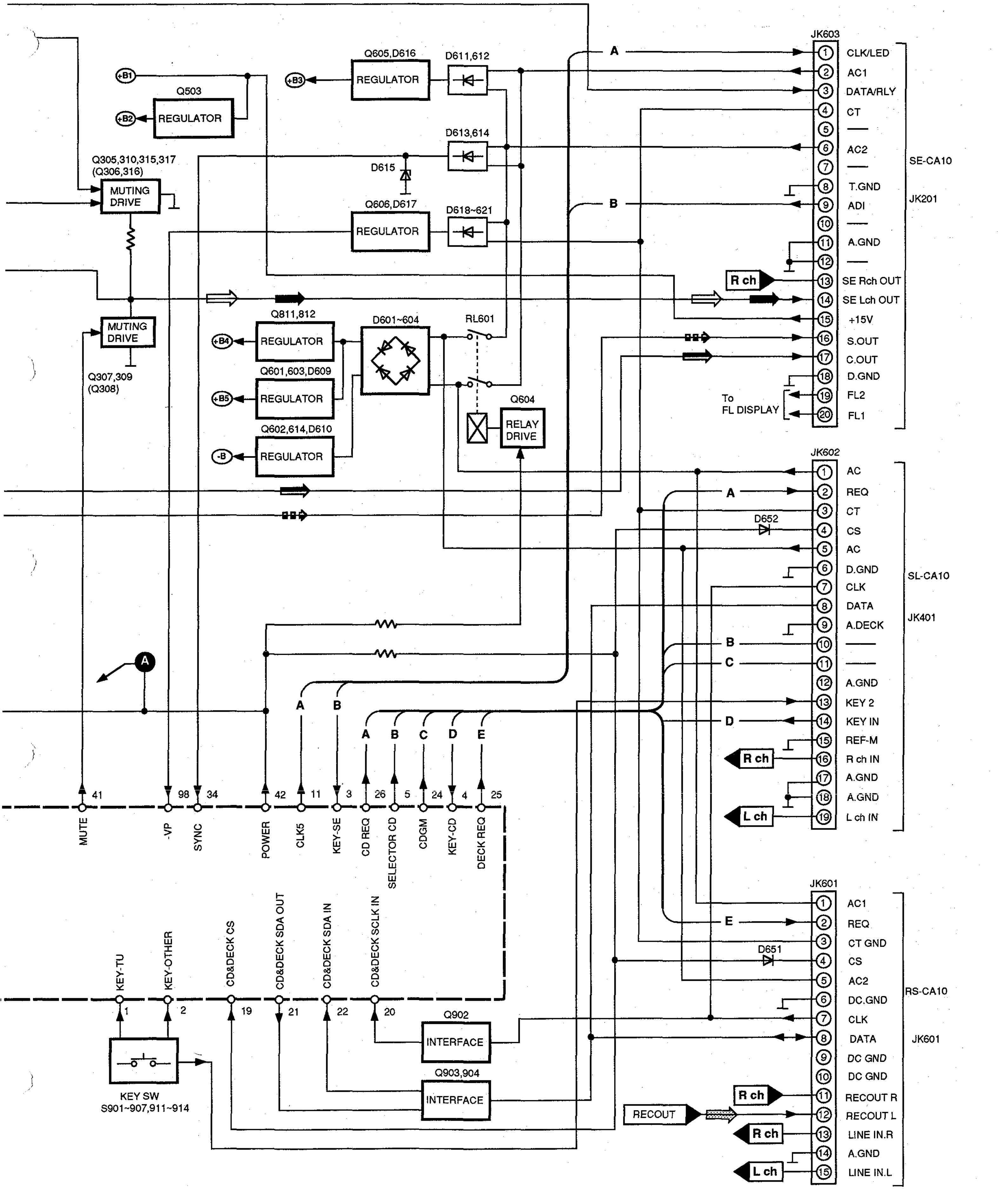
VR550
(RDS ADJ.)
X551
(456 kHZ)
+B2
LA2230M-TE-L
IC551
RDS DECODER
Q110
BUFFER AMP
PRE AMP
BPF
AGC
LPF
LPF
LEVEL DET.
ARI-DK DET.
D-PLL
LPF
LPF
DIV
VCO
L.P.F.
L.P.F.
BPF
CLOCK RECOVERY
LOGIC
BI-PHASE DEMOD.
DIFF DECODE
DEF
DEF
E-OR
LOGIC
LEVEL DET.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
B
LC7073M-TLM
IC550
SYNCHRO ERROR CORRECTING
X552
(4MHz)
OSC1
OSC2
LC65104A4F75
IC552
MICRO COMPUTER
R. DATA
R. CLK
R. STRT
CLOCK
CEI
CEO
DATA
R. RES
VDD
AV+
AV-
VSS
RES
X
Y
Z
PARALLEL/ SERIAL CONVERTER
ERROR DETECTOR/ CORRECTION
SERIAL/ PARALLEL CONVERTER
SYNCHRONIZE DETECTOR
SYSTEM CONTROL
OSC
VSS1
VSS2
VSS3
VDD
X550
(4MHz)
D550
Q551,552
POWER SUPPLY CONTROL
D553
+B3
Q550
RESET SIGNAL GENERATOR
A


LA2785
IC801
DOLBY PRO LOGIC CONTROL
OSC
Devider
Balance control
VR control
VTR
Control
Noise generator
L. P. F.
Noise filter
Noise CH
Mute
Vref.
L.P.F.
Rect.
Rect.
Log diff
Dual T.C. control
C.trim
C. mode
VCA
VCA
VCA
VCA
P.S
R ch
+B4
39
9 (10)
42
41
40
8
35
37 (36)
12 (31)
13 (30)
14 (29)
15 (28)
16 (27)
17 (26)
18 (25)
19 (24)
20 (23)
21 (22)
34
32
33
38
1
2
3
4
5
6
7
B
D
A
D801
D802
LV1010N
IC802
DOLBY PRO LOGIC DRIVE
Control logic
12K SRAM in out
out A/D in
out in
in D/A out
in 20K L.P.F. out
in Eject SW out
Control
Vref.
out S-trim in
OSC
out NR in
out 7k L.P.F. in
X801 (8MHz)
22
21
20
19
18
17
16 (15)
2
3
4
14
10
7
8 (9)
13
23
24
12
1
5
6
11

● Signal line ⇨ : FM signal ▮▮▮⇨ : FM OSC signal ➡ : AM signal ▮▮▮➡ : AM OSC signal

▨ : Rec out signal ➡ : Center speaker drive signal ▮▮⇨ : Sourround speaker drive signal


MC14066BFEL
IC581
SWITCHING
1 (10)
2 (11)
3 (8)
4 (9)
5 (6)
13 (12)
X5
X7
BUFFER AMP
BA4558FDXT1
IC551A
Q581 ~ 583
SIGNAL SELECTOR
MUTING DRIVE
Q801~803
M62425FPE1
IC302
ELECTORONIC VOLUME
M62425FPE1
IC803
ELECTORONIC VOLUME
NF
POWER RESET
MICRO COMPUTER INTERFACE
OUTPUT PORT
VREF
8 BIT
FILTER
Vcc
+B4
+B5
-B
POWER SUPPLY
Q312,313
2(35)
4 (33)
5 (32)
6 (31)
3 (34)
7~12 (25~30)
ATT DRIVE
Q807~809
Q804~806
A
B
C
D
D631
VR901 (VOLUME /PULUSE ENCODER)
VR902 (JOG/PULUSE ENCODER)
+B3
LED DRIVE
Q905,906
D903
Q908
D910
CLK4
DPL&CHECK
CEO
CEI
DATA I/O
X
Y
Z
ENABLE
CLK1
STB
DATA
CLK3
V-JOGA
V-JOGB
TU-JOGB
TU-JOGA
VCC
SEL-TU
M38198MC064F
IC901
SYSTEM CONTROL / FL DRIVE
STEREO
SD
CE
DATA IN
P1
P42
G1
G2
G9
Vss
REMOCON
AVss
VREF
RESET
X IN
XOUT
74~80, 82~90, 92~96
66~72, 58~64, 50~56
81
45~48
57, 65, 73
Q907
FL DRIVE
FL901
FL DISPLAY
Z901
REMOTE SENSOR
D911
RESET DRIVE
Q901
X901 (4.19MHz)


+B1
+B2
Q503
REGULATOR
+B3
Q605,D616
REGULATOR
D611,612
D613,614
D615
Q606,D617
REGULATOR
D618~621
Q305,310,315,317
(Q306,316)
MUTING
DRIVE
MUTING
DRIVE
Q307,309
(Q308)
Q811,812
REGULATOR
+B4
Q601,603,D609
REGULATOR
+B5
Q602,614,D610
REGULATOR
-B
D601~604
RL601
Q604
RELAY
DRIVE
A
B
A
B
A
B
C
D
E
41
MUTE
98
-VP
34
SYNC
42
POWER
11
CLK5
3
KEY-SE
26
CD REQ
5
SELECTOR CD
24
CDGM
4
KEY-CD
25
DECK REQ
1
KEY-TU
2
KEY-OTHER
19
CD&DECK CS
21
CD&DECK SDA OUT
22
CD&DECK SDA IN
20
CD&DECK SCLK IN
KEY SW
S901~907,911~914
Q902
INTERFACE
Q903,904
INTERFACE
JK603
① CLK/LED
② AC1
③ DATA/RLY
④ CT
⑤ —
⑥ AC2
⑦ —
⑧ T.GND
⑨ ADI
⑩ —
⑪ A.GND
⑫ —
⑬ SE Rch OUT
⑭ SE Lch OUT
⑮ +15V
⑯ S.OUT
⑰ C.OUT
⑱ D.GND
⑲ FL2
⑳ FL1
SE-CA10
JK201
R ch
To
FL DISPLAY
JK602
① AC
② REQ
③ CT
④ CS
⑤ AC
⑥ D.GND
⑦ CLK
⑧ DATA
⑨ A.DECK
⑩ —
⑪ —
⑫ A.GND
⑬ KEY 2
⑭ KEY IN
⑮ REF-M
⑯ R ch IN
⑰ A.GND
⑱ A.GND
⑲ L ch IN
D652
A
B
C
D
SL-CA10
JK401
R ch
L ch
JK601
① AC1
② REQ
③ CT GND
④ CS
⑤ AC2
⑥ DC.GND
⑦ CLK
⑧ DATA
⑨ DC GND
⑩ DC GND
⑪ RECOUT R
⑫ RECOUT L
⑬ LINE IN.R
⑭ A.GND
⑮ LINE IN.L
D651
E
RS-CA10
JK601
RECOUT
R ch
R ch
L ch

# ■ TERMINAL GUIDE

## ● IC901 (M38198MC064F): SYSTEM CONTROL/ FL DRIVE

| Pin No. | Mark | I/O | Function |
|---|---|---|---|
| 1 | KEY-TU | I | Tuner operation switch signal input |
| 2 | KEY-OTHER | I | Other operation switch signal input |
| 3 | KEY-SE | I | SE-CA10 operation switch signal input |
| 4 | KEY-CD | I | SL-CA10 operation switch signal input |
| 5 | SELECTOR CD | O | SL-CA10 power control signal output |
| 6 | DATA | O | Data output for NJU7313, M62425, LC7218, LA2785, and LV1010 |
| 7 | CLK1 | O | Clock output for NJU7313, LC7218, LA2785, LV1010 and LC65104 |
| 8 | CLK2 | O | Clock output (Not used, open) |
| 9 | CLK3 | O | Clock output for M62425 (Main volume) |
| 10 | CLK4 | O | Clock output for M62425 (Surround volume) |
| 11 | CLK5 | O | SE-CA10 LED drive (BU209F-E2) signal output |
| 12 | SEL_TU | O | LED (D903-TUNER ON) drive signal output |
| 13 | STB | O | STB signal output for NJU7313 |
| 14 | ENABLE | O | Enable signal output for LA2785 and LV1010 |
| 15 | CE | O | Chip enable signal output for LC7218 |
| 16 | DATA IN | I | Data input from LC7218 |
| 17 | CEO | O | Serial data output terminal for (E, EG) areas. |
| 18 | DATA I/O | I/O | Serial data input/output terminal for (E, EG) areas. |
| 19 | CE & DECK CS | I | Serial data communication starting signal input |
| 20 | CD & DECK SCLK IN | I | Serial clock input |
| 21 | CD & DECK SDA OUT | O | Serial data output |
| 22 | CD & DECK SDA IN | I | Serial data input |
| 23 | VRST | — | Not used |
| 24 | CDGM | — | Not used |
| 25 | DECK REQ | O | RS-CA10 request signal output |
| 26 | CD REQ | O | SL-CA10 request signal output |
| 27 | DPL & CHECK | I/O | Clock check signal |
| 28 | CR TIMER | I/O | Capacitor and resistor oscillation terminal |
| 29 | CEI | I | Serial data input terminal for (EG) area only |
| 30 | REMOCON | I | Remove control signal input |
| 31 | V-JOGB | I | Volume control signal input |
| 32 | V-JOGA | I | |
| 33 | MIC DET | I | Microphone connecting detect signal input |
| 34 | SYNC | I | AC power source input terminal |
| 35 | RESET | I | Reset signal input |
| 36 | SD | I | SD signal input for tuner circuit |
| 37 | STEREO | I | STEREO signal input for tuner circuit |
| 38 | X IN | I | Connected to the ceramic oscillator (F=4.19MHz) |
| 39 | X OUT | O | |
| 40 | Vss | — | GND terminal |
| 41 | MUTE | O | Muting signal output |
| 42 | POWER | O | Power control signal output |
| 43 | TU-JOGB | I | JOG (TUNING) control terminal |
| 44 | TU-JOGA | I | |
| 45<br>≀<br>49 | G9<br>≀<br>G5 | O | Grid signal output |
| 50<br>≀<br>56 | P42<br>≀<br>P36 | O | Segment signal output |
| 57 | G4 | O | Grid signal output |
| 58<br>≀<br>64 | P35<br>≀<br>P29 | O | Segment signal output |
| 65 | G3 | O | Grid signal output |
| 66<br>≀<br>72 | P28<br>≀<br>P22 | O | Segment signal output |
| 73 | G2 | O | Grid signal output |
| 74<br>≀<br>80 | P21<br>≀<br>P15 | O | Segment signal output |
| 81 | G1 | O | Grid signal output |
| 82<br>≀<br>90 | P14<br>≀<br>P6 | O | Segment signal output |
| 91 | Vcc | — | Power supply (+5V) |
| 92<br>≀<br>96 | P5<br>≀<br>P1 | O | Segment signal output |
| 97 | CS | I | Scan signal input |
| 98 | -VP | — | Negative power supply |
| 99 | AVSS | — | Connect to GND |
| 100 | VREF | — | Reference voltage input |

### • IC552 (LC65104A4F75): MICROCOMPUTER [For (E, EG) areas.]

| Pin No. | Mark | I/O | Function |
|---|---|---|---|
| 1 | PB0 | — | Not used |
| 2 | PB1 | — | Not used |
| 3 | PB2 | — | Not used |
| 4 | PB3 | — | Not used |
| 5 | AV+ | — | Not used |
| 6 | AV− | — | Not used |
| 7 | VSS | — | GND terminal |
| 8 | OSC1 | I | Oscillating terminal (f=4MHz) |
| 9 | OSC2 | O | Oscillating terminal (f=4MHz) |
| 10 | VDD | I | +5V |
| 11 | /RES | I | Reset signal input |
| 12 | TEST | — | Not used |
| 13 | R. DATA | I | RDS data signal input |
| 14 | /R. RES | O | RDS reset signal output |
| 15 | R. CLK | I | RDS clock signal input |
| 16 | R. STRT | I | RDS start signal input |
| 17 | CEI | I | Serial data input detection terminal |
| 18 | CEO | O | Serial data output detection terminal |
| 19 | CLOCK | I/O | Serial clock input/output terminal |
| 20 | DATA | I/O | Serial data input/output terminal |
| 21 | PD0 | — | Not used |
| 22 | PD1 | — | Not used |
| 23 | PD2 | — | Not used |
| 24 | PD3 | — | Not used |
| 25 | PE0 | — | Not used |
| 26 | PE1 | — | Not used |
| 27 | SIGNAL | — | Not used |
| 28 | PA1 | — | Not used |
| 29 | PA2 | — | Not used |
| 30 | PA3 | — | Not used |

## REPLACEMENT PARTS LIST

**Notes:** * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC101 | LA1832MH-TEL | FM/AM IF AMP/AM OSC | |
| IC102 | LC7218M-TE-L | PLL FREQUENCY SYNTHESIZER | |
| IC201 | AN6558SFE2 | PHONO EQ AMP | |
| IC202 | NJU7313AMT2 | INPUT SELECTOR | |
| IC203 | M5219FPTA | BUFFER AMP | |
| IC302 | M62425FPE1 | ELECTORONIC VOLUME | |
| IC550 | LC7073M-TLM | SYNCH. ERROR CORRECTION | (E, EG) |
| IC551 | LA2230M-TE-L | RDS DECODER | (E, EG) |
| IC551A | BA4558FDXT1 | BUFFER AMP | |
| IC552 | LC65104A4F75 | MICROCOMPUTER | (E, EG) |
| IC581 | MC14066BFEL | SIGNAL SELECTOR | |
| IC701 | NJM2279MT2 | VIDEO SIGNAL SELECTOR | |
| IC702 | MC14052BFR2 | VIDEO SIGNAL SELECTOR | |
| IC801 | LA2785 | DOLBY PRO LOGIC CONTROL | |
| IC802 | LV1010N | DOLBY PRO LOGIC DRIVE | |
| IC803 | M62425FPE1 | ELECTRONIC VOLUME | |
| IC804 | M5219FPTA | BUFFER AMP | |
| IC901 | M38198MC064F | SYSTEM CONTROL/FL DRIVE | |
| | | | |
| | | TRANSISTOR(S) | |
| | | | |
| Q101, 102 | 2SC2787L | TRANSISTOR | |
| Q103, 104 | 2SC2785FE | TRANSISTOR | |
| Q106 | UN4111 | TRANSISTOR | (E, EB, EG) |
| Q106 | UN411FTA | TRANSISTOR | (GC) |
| Q107, 108 | 2SC3311ARSTA | TRANSISTOR | |
| Q110 | 2SC3311ARSTA | TRANSISTOR | (E, EG) |
| Q191-193 | 2SC3311ARSTA | TRANSISTOR | (E, EB) |
| Q305-308 | 2SC3311A-Q | TRANSISTOR | |
| Q309, 310 | UN4115 | TRANSISTOR | |
| Q312, 313 | 2SA1309A-R | TRANSISTOR | |
| Q315, 316 | 2SC3311A-Q | TRANSISTOR | |
| Q317 | UN4115 | TRANSISTOR | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| Q503 | 2SC3940AQSTA | TRANSISTOR | ⚠ |
| Q550, 551 | UN4211 | TRANSISTOR | (E, EG) |
| Q552 | UN4111 | TRANSISTOR | (E, EG) |
| Q581 | UN4211 | TRANSISTOR | |
| Q582 | UN4111 | TRANSISTOR | |
| Q583 | UN4211 | TRANSISTOR | |
| Q601 | 2SC3940AQSTA | TRANSISTOR | ⚠ |
| Q602 | 2SA1534AQRTA | TRANSISTOR | ⚠ |
| Q603 | 2SC3940AQSTA | TRANSISTOR | ⚠ |
| Q604 | 2SD2144S | TRANSISTOR | |
| Q605 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q606 | 2SB621A-R | TRANSISTOR | ⚠ |
| Q614 | 2SA1534AQRTA | TRANSISTOR | ⚠ |
| Q701 | 2SB621A-R | TRANSISTOR | ⚠ |
| Q702 | 2SD592ARSTA | TRANSISTOR | ⚠ |
| Q703 | UN4211 | TRANSISTOR | |
| Q801, 802 | 2SD1450RTA | TRANSISTOR | |
| Q803, 804 | UN4115 | TRANSISTOR | |
| Q805, 806 | 2SD1450RTA | TRANSISTOR | |
| Q807, 808 | 2SC3327-A | TRANSISTOR | |
| Q809 | UN4115 | TRANSISTOR | |
| Q811, 812 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q901 | UN4214TA | TRANSISTOR | |
| Q902-904 | 2SC3311A-Q | TRANSISTOR | |
| Q905 | UN411FTA | TRANSISTOR | |
| Q906 | 2SC3311A-Q | TRANSISTOR | |
| Q907 | UN4119 | TRANSISTOR | |
| Q908 | 2SD2144S | TRANSISTOR | |
| | | | |
| | | DIODE(S) | |
| | | | |
| D101 | MA4051MTA | DIODE | ⚠ |
| D102 | MA165 | DIODE | |
| D302 | MA165 | DIODE | |
| D504 | MA4082MTA | DIODE | ⚠ |
| D550, 551 | MA165 | DIODE | (E, EG) |
| D552 | MA4051MTA | DIODE | (E, EG)⚠ |
| D553 | MA165 | DIODE | (E, EG) |
| D601-604 | RL1N4003N02 | DIODE | ⚠ |
| D605 | MA165 | DIODE | |
| D606, 607 | MA719TA | DIODE | |
| D609 | MA4075HTA | DIODE | ⚠ |
| D610 | MA4082LTA | DIODE | ⚠ |
| D611, 612 | RL1N4003N02 | DIODE | ⚠ |
| D613, 614 | MA185TA | DIODE | ⚠ |
| D615 | MA4051MTA | DIODE | ⚠ |
| D616 | MA4062-H | DIODE | ⚠ |
| D617 | MA4300M | DIODE | ⚠ |
| D618-621 | MA185TA | DIODE | ⚠ |
| D622 | MA4039MTA | DIODE | ⚠ |
| D631 | MA700TA | DIODE | |
| D632 | MA165 | DIODE | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D651, 652 | MA165 | DIODE | |
| D653 | MA719TA | DIODE | |
| D701, 702 | MA4056MTA | DIODE | ⚠ |
| D801-803 | MA165 | DIODE | |
| D808 | MA4100MTA | DIODE | ⚠ |
| D810 | MA165 | DIODE | |
| D901, 902 | MA165 | DIODE | |
| D903 | SPR505MDTT | L. E. D | |
| D910-912 | 1SS291TA | DIODE | |
| D932 | MA165 | DIODE | |
| D934-937 | MA165 | DIODE | |
| D939 | MA165 | DIODE | (E, EG) |
| D940 | MA165 | DIODE | (E, EB) |
| D941 | MA165 | DIODE | (EG, GC) |
| | | | |
| | | VARIABLE RESISTOR(S) | |
| | | | |
| VR550 | EVNDCBA03B53 | RDS ADJ. | (E, EG) |
| VR901, 902 | EVQW2BF2024B | VOLUME/TUNING | |
| | | | |
| | | COMPONENT COMBINATION(S) | |
| | | | |
| Z101 | RLA2Z002M-T | COMPONENT COMBINATION | (EG, GC) |
| Z102 | RLI2Z006M-T | COMPONENT COMBINATION | |
| Z191 | RLA6Z005M-T | COMPONENT COMBINATION | (E, EB) |
| Z901 | RCDHC-278N | REMOTE SENSOR | |
| | | | |
| | | COIL(S) | |
| | | | |
| L101 | ELESNR68MA | COIL | |
| L103 | ELEXTR47MA9 | COIL | |
| L104 | ELEXT1R0KA9 | COIL | (E, EB, EG) |
| L105, 106 | ELELN822KL | COIL | |
| L151 | SLM1B10M-1M | COIL | (E, EB, EG) |
| L191 | ELESNR68MA | COIL | |
| L550-552 | ELEXT101KA9 | COIL | (E, EG) |
| L801 | ELESN101KA | COIL | |
| L901 | RLQA100JT-Y | COIL | |
| | | | |
| | | FILTER(S) | |
| | | | |
| CF201 | RLFFETNGD01L | CERAMIC FILTER | (E, EB, EG) |
| CF201 | RLFFETWND01M | CERAMIC FILTER | (GC) |
| CF202 | RLFFETMGD01L | CERAMIC FILTER | (E, EB, EG) |
| CF202 | RLFFETWND01M | CERAMIC FILTER | (GC) |
| | | | |
| | | OSCILLATOR(S) | |
| | | | |
| X101 | RSXZ456KM07M | OSCILLATOR(456KHz) | |
| X102 | RLFDGT05DD | OSCILLATOR(10. 65MHz) | |
| X103 | RSXC7M20S05T | OSCILLATOR(7. 2MHz) | |
| X550 | RVBCST4R00MT | OSCILLATOR(4MHz) | (E, EG) |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| X551 | RSXZ456KM07M | OSCILLATOR(456KHz) | (E, EG) |
| X552 | RVBCST4R00MT | OSCILLATOR(4MHz) | (E, EG) |
| X801 | EF0EC8004T4 | OSCILLATOR(8MHz) | |
| X901 | RSXC4M19S02T | OSCILLATOR(4.19MHz) | |
| | | | |
| | | DISPLAY TUBE(S) | |
| | | | |
| FL901 | RSL0216-F | DISPLAY TUBE | |
| | | | |
| | | FM FRONT END(S) | |
| | | | |
| Z120 | RAL0019 | FM FRONT END | (E, EB, EG) |
| Z120 | RAL0006 | FM FRONT END | (GC) |
| | | | |
| | | SWITCH(ES) | |
| | | | |
| S901 | EVQ21405R | FM | |
| S902 | EVQ21405R | AM(MW/LW) | |
| S903 | EVQ21405R | TUNING MODE | |
| S904 | EVQ21405R | TIMER PLAY | |
| S905 | EVQ21405R | TIMER REC | |
| S906 | EVQ21405R | CLOCK/TIMER MODE | |
| S907 | EVQ21405R | CLOCK/TIMER SET | |
| S911 | EVQ21405R | INPUT SELECTOR | |
| S912 | EVQ21405R | DISPLAY MODE | (E, EG) |
| S913 | EVQ21405R | PTY SEL | (E, EG) |
| S914 | EVQ21405R | PTY SEARCH | (E, EG) |
| | | | |
| | | RELAY(S) | |
| | | | |
| RL601 | RSY0017M-0 | RELAY | ⚠ |
| | | | |
| | | CONNECTOR(S) AND SOKET | |
| | | | |
| CN701 | RJT057W012-1 | CONNECTOR(12P) | |
| CN801 | RJT057W012-1 | CONNECTOR(12P) | |
| CN101A | RJT057W007-1 | CONNECTOR(7P) | |
| CN101B | RJU057W007 | SOCKET(7P) | |
| CN102A | RJT057W007-1 | CONNECTOR(7P) | |
| CN102B | RJU057W007 | SOCKET(7P) | |
| CN501A | RJT057W007-1 | CONNECTOR(7P) | (E, EG) |
| CN501B | RJU057W007 | SOCKET(7P) | (E, EG) |
| CN901A | RJS1A6820 | CONNECTOR(20P) | |
| CN901B | RJS1A6820 | CONNECTOR(20P) | |
| CN902A | RJS1A6820 | CONNECTOR(20P) | |
| CN902B | RJS1A6820 | CONNECTOR(20P) | |
| CP801 | RJU057W012 | SOCKET(12P) | |
| CP701 | RJU057W012 | SOCKET(12P) | |
| JK601 | RJT065K15 | CONNECTOR(15P) | |
| JK602 | RJT065K19 | CONNECTOR(19P) | |
| JK603 | RJT065K20 | CONNECTOR(20P) | |
| | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | JACK(S) | |
| | | | |
| JK101 | RJH5210M | FM/AM ANT | (E, EB, EG) |
| JK101 | RJH5404M | FM/AM ANT | (GC) |
| JK201 | SJF3068-7N | EXT OUT | |
| JK202 | SJF3069-5N | EXT IN/PHONO | |
| JK701 | SJF3068-7N | VCR OUT | |
| JK702 | SJF3069-5N | VCR IN/VDP IN(AUDIO) | |
| JK703 | SJF3069-3N | VCR/TV/VDP IN-OUT(VIDEO) | |
| | | | |
| | | EARTH PLATE(S) | |
| | | | |
| E601, 602 | SNE1004-2 | EARTH PLATE | |

# REPLACEMENT PARTS LIST

**Notes:** * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

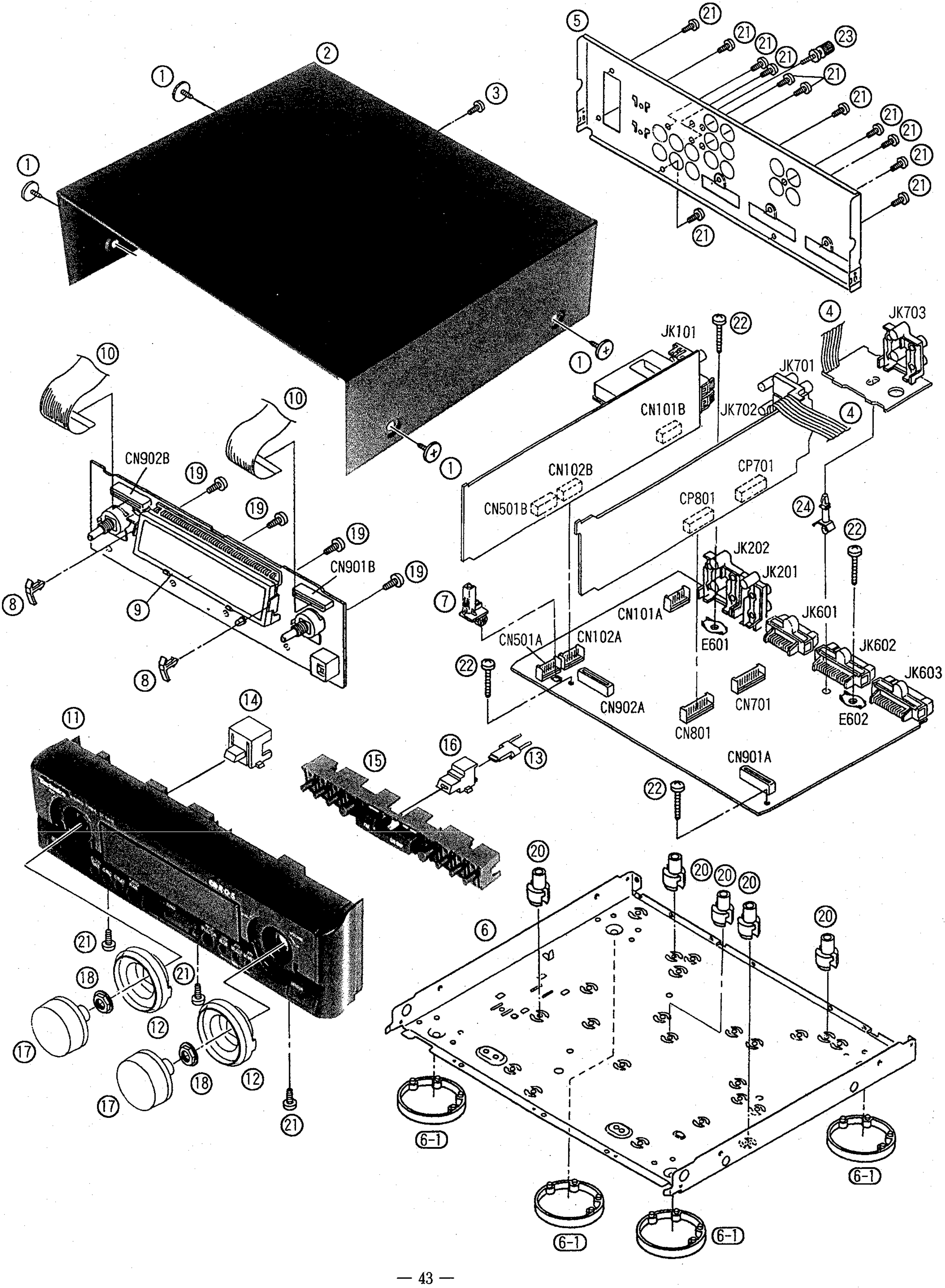
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | CABINET AND CHASSIS | |
| | | | |
| 1 | RHD30007-K1 | SCREW | |
| 2 | RKM0302-K | CABINET | |
| 3 | XTB3+8JFZ | SCREW | |
| 4 | REZ0813 | CONNECTOR ASS'Y(6P) | |
| 5 | RGR0216B-G | REAR PANEL | (E, EB) |
| 5 | RGR0216B-H | REAR PANEL | (EG) |
| 5 | RGR0216B-J | REAR PANEL | (GC) |
| 6 | RFKJTVC910-K | BOTTOM CHASSIS ASS'Y | |
| 6-1 | RKA0011-3 | SET FOOT | |
| 7 | RMN0337 | P. C. B. HOLDER | (EB, GC) |
| 8 | RMN0195 | FL HOLD PIECE | |
| 9 | RMN0370 | FL HOLDER | |
| 10 | REZ0777 | FLAT CABLE(20P) | |
| 11 | RFKGTCA10E-K | FRONT PANEL ASS'Y | (E, EG) |
| 11 | RFKGTCA10EBK | FRONT PANEL ASS'Y | (EB, GC) |
| 12 | RGK0790-1S | VOLUME ORNAMENT | |
| 13 | RGL0315-Q | PANEL LIGHT | |
| 14 | RFKNTCA10EA | SET BUTTON ASS'Y | (E, EB) |
| 14 | RFKNTCA10EGA | SET BUTTON ASS'Y | (EG, GC) |
| 15 | RFKNTCA10EB | SELECTOR BUTTON ASS'Y | (E, EB) |
| 15 | RFKNTCA10EGB | SELECTOR BUTTON ASS'Y | (EG, GC) |
| 16 | RFKNTCA10EC | PANEL LIGHT ORNAMENT ASS'Y | (E, EB) |
| 16 | RFKNTCA10EGC | PANEL LIGHT ORNAMENT ASS'Y | (EG, GC) |
| 17 | RGW0242-K | VOLUME KNOB | |
| 18 | RHN90001 | NUT | |
| 19 | XTBS26+8J | SCREW | |
| 20 | SHE185-2 | P. C. B. SUPPORT | |
| 21 | XTBS3+8JFZ1 | SCREW | |
| 22 | XTB3+16JFZ | SCREW | |
| 23 | RHD30070 | GND SCREW | |
| 24 | RMN0059 | P. C. B. SUPPORT | |

# RESISTORS AND CAPACITORS

**Notes:** * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| | | |
| | | RESISTORS |
| | | |
| R103 | ERDS2TJ101 | 1/4W 100 (E, EB, EG) |
| R103 | ERDS2TJ271T | 1/4W 270 (GC) |
| R104 | ERDS2TJ103 | 1/4W 10K (E, EB, EG) |
| R104 | ERDS2TJ822T | 1/4W 8. 2K (GC) |
| R105 | ERDS2TJ471 | 1/4W 470 |
| R106 | ERDS2TJ474 | 1/4W 470K |
| R107 | ERDS2TJ331 | 1/4W 330 |
| R108 | ERDS2TJ474 | 1/4W 470K |
| R109 | ERDS2TJ331 | 1/4W 330 |
| R110 | ERDS2TJ102 | 1/4W 1K |
| R112 | ERDS2TJ104 | 1/4W 100K |
| R113 | ERDS2TJ103 | 1/4W 10K |
| R114 | ERDS2TJ562 | 1/4W 5. 6K |
| R115 | ERDS2TJ561 | 1/4W 560 |
| R116 | ERDS2TJ102 | 1/4W 1K |
| R117 | ERDS2TJ823T | 1/4W 82K (E, EB, EG) |
| R117 | ERDS2TJ273T | 1/4W 27K (GC) |
| R118 | ERDS2TJ562 | 1/4W 5. 6K |
| R119 | ERDS2TJ103 | 1/4W 10K (E, EG) |
| R119 | ERDS2TJ822T | 1/4W 8. 2K (EB) |
| R119 | ERDS2TJ682T | 1/4W 6. 8K (GC) |
| R120 | ERDS2TJ473 | 1/4W 47K |
| R121 | ERDS2TJ332 | 1/4W 3. 3K |
| R122 | ERDS2TJ272T | 1/4W 2. 7K |
| R124 | ERDS2TJ271 | 1/4W 270 |
| R125, 126 | ERDS2TJ152 | 1/4W 1. 5K |
| R127 | ERDS2TJ103 | 1/4W 10K |
| R128 | ERDS2TJ820 | 1/4W 82 |
| R129 | ERDS2TJ473 | 1/4W 47K |
| R130 | ERDS2TJ103 | 1/4W 10K |
| R132 | ERDS2TJ103 | 1/4W 10K |
| R133-137 | ERDS2TJ102 | 1/4W 1K |
| R138 | ERDS2TJ103 | 1/4W 10K |
| R139, 140 | ERDS2TJ272T | 1/4W 2. 7K |
| R141, 142 | ERDS2TJ102 | 1/4W 1K |
| R143, 144 | ERDS2TJ222 | 1/4W 2. 2K |
| R145, 146 | ERDS2TJ821 | 1/4W 820 (E, EB, EG) |
| R145, 146 | ERDS2TJ102T | 1/4W 1K (GC) |
| R147, 148 | ERDS2TJ474 | 1/4W 470K |
| R149 | ERDS2TJ680T | 1/4W 68 |
| R171, 172 | ERDS2TJ102 | 1/4W 1K |
| R173 | ERDS2TJ471 | 1/4W 470 |
| R175 | ERDS2TJ102 | 1/4W 1K |
| R176 | ERDS2TJ391 | 1/4W 390 |
| R177 | ERDS2TJ472 | 1/4W 4. 7K (E, EG) |
| R191 | ERDS2TJ103 | 1/4W 10K (E, EB) |
| R192 | ERDS2TJ122 | 1/4W 1. 2K (E, EB) |
| R193 | ERDS2TJ182 | 1/4W 1. 8K (E, EB) |
| R194 | ERDS2TJ122 | 1/4W 1. 2K (E, EB) |
| R195 | ERDS2TJ222 | 1/4W 2. 2K (E, EB) |
| R201, 202 | ERDS2TJ102 | 1/4W 1K |
| R203, 204 | ERDS2TJ473 | 1/4W 47K |
| R205, 206 | ERDS2TJ331 | 1/4W 330 |
| R207, 208 | ERDS2TJ271 | 1/4W 270 |
| R209, 210 | ERDS2TJ184T | 1/4W 180K |
| R211, 212 | ERDS2TJ123 | 1/4W 12K |
| R213, 214 | ERDS2TJ680T | 1/4W 68 |
| R215, 216 | ERDS2TJ272T | 1/4W 2. 7K |
| R217, 218 | ERDS2TJ392T | 1/4W 3. 9K |
| R219, 220 | ERDS1FVJ221T | 1/2W 220 ⚠ |

# CABINET PARTS LOCATION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CP801
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JK202
JK201
CN101A
JK601
CN501A
CN102A
E601
JK602
JK603
CN902A
CN701
E602
CN801
CN901A

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R221, 222 | ERDS2TJ752T | 1/4W 7.5K |
| R223, 224 | ERDS2TJ562 | 1/4W 5.6K |
| R225, 226 | ERDS2TJ472 | 1/4W 4.7K |
| R227, 228 | ERDS2TJ332 | 1/4W 3.3K |
| R229-231 | ERDS2TJ222 | 1/4W 2.2K |
| R233, 234 | ERDS2TJ223 | 1/4W 22K |
| R235, 236 | ERDS2TJ822 | 1/4W 8.2K |
| R237, 238 | ERDS2TJ123 | 1/4W 12K |
| R239, 240 | ERDS2TJ102 | 1/4W 1K |
| R305, 306 | ERDS2TJ223 | 1/4W 22K |
| R308, 309 | ERDS2TJ153 | 1/4W 15K |
| R310 | ERDS2TJ182 | 1/4W 1.8K |
| R315, 316 | ERDS2TJ101 | 1/4W 100 |
| R317-320 | ERDS2TJ471 | 1/4W 470 |
| R323, 324 | ERDS2TJ103 | 1/4W 10K |
| R325, 326 | ERDS2TJ123 | 1/4W 12K |
| R327, 328 | ERDS2TJ182 | 1/4W 1.8K |
| R329, 330 | ERDS2TJ102 | 1/4W 1K |
| R331, 332 | ERDS2TJ222 | 1/4W 2.2K |
| R337, 338 | ERDS2TJ391 | 1/4W 390 |
| R341, 342 | ERDS2TJ103 | 1/4W 10K |
| R343 | ERDS2TJ105T | 1/4W 1M |
| R344 | ERDS2TJ102 | 1/4W 1K |
| R345, 346 | ERDS2TJ104 | 1/4W 100K |
| R347, 348 | ERDS2TJ102 | 1/4W 1K |
| R349 | ERDS2TJ104 | 1/4W 100K |
| R350 | ERDS2TJ105T | 1/4W 1M |
| R351 | ERDS2TJ332 | 1/4W 3.3K |
| R352 | ERDS2TJ182 | 1/4W 1.8K |
| R353, 354 | ERDS2TJ152 | 1/4W 1.5K |
| R355, 356 | ERDS2TJ472 | 1/4W 4.7K |
| R357 | ERDS2TJ105T | 1/4W 1M |
| R359, 360 | ERDS2TJ224T | 1/4W 220K |
| R361 | ERDS2TJ102 | 1/4W 1K |
| R362 | ERDS2TJ223 | 1/4W 22K |
| R376 | ERDS2TJ223 | 1/4W 22K |
| R378, 379 | ERDS2EJ121 | 1/4W 120 |
| R380 | ERDS2TJ102 | 1/4W 1K |
| R381 | ERDS2TJ223 | 1/4W 22K |
| R382 | ERDS2TJ105T | 1/4W 1M |
| R383 | ERDS2TJ472 | 1/4W 4.7K |
| R393, 394 | ERDS2TJ104 | 1/4W 100K |
| R396 | ERDS2TJ102 | 1/4W 1K |
| R397, 398 | ERDS2TJ150T | 1/4W 15 |
| R506 | ERDS2TJ152 | 1/4W 1.5K |
| R507 | ERDS2TJ331 | 1/4W 330 |
| R508, 509 | ERDS2TJ682T | 1/4W 6.8K |
| R511, 512 | ERDS2TJ122 | 1/4W 1.2K |
| R550 | ERDS2TJ564 | 1/4W 560K (E, EG) |
| R551 | ERDS2TJ223 | 1/4W 22K (E, EG) |
| R552 | ERDS2TJ103 | 1/4W 10K (E, EG) |
| R553, 554 | ERDS2TJ102 | 1/4W 1K (E, EG) |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R555 | ERDS2TJ104 | 1/4W 100K (E, EG) |
| R556 | ERDS2TJ332 | 1/4W 3.3K (E, EG) |
| R557 | ERDS2TJ103 | 1/4W 10K (E, EG) |
| R558 | ERDS2TJ102 | 1/4W 1K (E, EG) |
| R559 | ERDS2TJ562 | 1/4W 5.6K (E, EG) |
| R560 | ERDS2TJ820 | 1/4W 82 (E, EG) |
| R562 | ERDS2TJ473 | 1/4W 47K (E, EG) |
| R563 | ERDS2TJ332 | 1/4W 3.3K (E, EG) |
| R564 | ERDS2TJ155 | 1/4W 1.5M (E, EG) |
| R565-567 | ERDS2TJ332 | 1/4W 3.3K (E, EG) |
| R568-571 | ERDS2TJ101 | 1/4W 100 (E, EG) |
| R572 | ERDS2TJ103 | 1/4W 10K (E, EG) |
| R573 | ERDS2TJ471 | 1/4W 470 (E, EG) |
| R574-576 | ERDS2TJ102 | 1/4W 1K (E, EG) |
| R581 | ERDS2TJ104 | 1/4W 100K |
| R582 | ERDS2TJ102 | 1/4W 1K |
| R601, 602 | ERD2FCVJ4R7T | 1/4W 4.7 ⚠ |
| R603, 604 | ERDS2TJ102 | 1/4W 1K |
| R605 | ERDS2TJ101 | 1/4W 100 |
| R606, 607 | ERDS2TJ393 | 1/4W 39K |
| R609 | ERD25FJ2R2 | 1/4W 2.2 ⚠ |
| R610 | ERDS2TJ332 | 1/4W 3.3K |
| R612 | ERDS2TJ472 | 1/4W 4.7K |
| R613, 614 | ERDS2TJ682T | 1/4W 6.8K |
| R615 | ERDS2TJ103 | 1/4W 10K |
| R616 | ERD25FVJ4R7T | 1/4W 4.7 ⚠ |
| R621, 622 | ERDS2TJ151 | 1/4W 150 |
| R623, 624 | ERDS2TJ682T | 1/4W 6.8K |
| R631-634 | ERDS2TJ102 | 1/4W 1K |
| R635, 636 | ERDS2TJ222 | 1/4W 2.2K |
| R637 | ERDS2TJ100 | 1/4W 10 |
| R641, 642 | ERDS2TJ471 | 1/4W 470 |
| R646 | ERDS2TJ562 | 1/4W 5.6K |
| R647 | ERDS2TJ123 | 1/4W 12K |
| R651-654 | ERDS2TJ2R2T | 1/4W 2.2 |
| R656 | ERDS2TJ221 | 1/4W 220 |
| R701, 702 | ERDS2TJ103 | 1/4W 10K |
| R703, 704 | ERDS2TJ822 | 1/4W 8.2K |
| R705, 706 | ERDS2TJ332 | 1/4W 3.3K |
| R707, 708 | ERDS2TJ472 | 1/4W 4.7K |
| R709, 710 | ERDS2TJ103 | 1/4W 10K |
| R711, 712 | ERDS2TJ822 | 1/4W 8.2K |
| R718 | ERDS2TJ680T | 1/4W 68 |
| R719, 720 | ERDS2TJ750 | 1/4W 75 |
| R721 | ERDS2TJ680T | 1/4W 68 |
| R722, 723 | ERDS2TJ102 | 1/4W 1K |
| R724 | ERDS2TJ103 | 1/4W 10K |
| R726, 727 | ERDS2TJ103 | 1/4W 10K |
| R801, 802 | ERDS2TJ392T | 1/4W 3.9K |
| R803-806 | ERDS2TJ222 | 1/4W 2.2K |
| R807, 808 | ERDS2TJ104 | 1/4W 100K |
| R809, 810 | ERDS2TJ102 | 1/4W 1K |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R811 | ERDS2TJ105T | 1/4W 1M |
| R813 | ERDS2TJ472 | 1/4W 4.7K |
| R814-816 | ERDS2TJ332 | 1/4W 3.3K |
| R817 | ERDS2TJ333 | 1/4W 33K |
| R818 | ERDS2TJ183T | 1/4W 18K |
| R819, 820 | ERDS2TJ102 | 1/4W 1K |
| R821 | ERDS2TJ473 | 1/4W 47K |
| R822 | ERDS2TJ334 | 1/4W 330K |
| R823 | ERDS2TJ102 | 1/4W 1K |
| R824 | ERDS2TJ105T | 1/4W 1M |
| R828 | ERDS2TJ222 | 1/4W 2.2K |
| R829, 830 | ERDS2TJ473 | 1/4W 47K |
| R831 | ERDS2TJ183T | 1/4W 18K |
| R832 | ERDS2TJ153 | 1/4W 15K |
| R833, 834 | ERDS2TJ333 | 1/4W 33K |
| R835, 836 | ERDS2TJ222 | 1/4W 2.2K |
| R837, 838 | ERDS2TJ332 | 1/4W 3.3K |
| R839, 840 | ERDS2TJ103 | 1/4W 10K |
| R841, 842 | ERDS2TJ104 | 1/4W 100K |
| R843, 844 | ERDS2TJ222 | 1/4W 2.2K |
| R845 | ERDS2TJ182 | 1/4W 1.8K |
| R846 | ERDS2TJ391 | 1/4W 390 |
| R847, 848 | ERDS2TJ102 | 1/4W 1K |
| R849 | ERDS2TJ391 | 1/4W 390 |
| R850 | ERDS2TJ105T | 1/4W 1M |
| R851, 852 | ERDS2TJ102 | 1/4W 1K |
| R853, 854 | ERDS2TJ223 | 1/4W 22K |
| R855, 856 | ERDS2TJ102 | 1/4W 1K |
| R857, 858 | ERDS2EJ121 | 1/4W 120 |
| R859 | ERDS2TJ472 | 1/4W 4.7K |
| R860 | ERDS2TJ182 | 1/4W 1.8K |
| R861 | ERDS2TJ105T | 1/4W 1M |
| R862 | ERDS2TJ472 | 1/4W 4.7K |
| R863-865 | ERDS2TJ473 | 1/4W 47K |
| R866-868 | ERDS2TJ102 | 1/4W 1K |
| R871, 872 | ERDS2TJ4R7T | 1/4W 4.7 |
| R873 | ERD2FCVJ4R7T | 1/4W 4.7 ⚠ |
| R874, 875 | ERDS2TJ221 | 1/4W 220 |
| R876, 877 | ERDS2TJ333 | 1/4W 33K |
| R901 | ERDS2TJ821 | 1/4W 820 |
| R902 | ERDS2TJ102 | 1/4W 1K |
| R903 | ERDS2TJ122 | 1/4W 1.2K |
| R904 | ERDS2TJ152 | 1/4W 1.5K |
| R905 | ERDS2TJ182 | 1/4W 1.8K |
| R906 | ERDS2TJ222 | 1/4W 2.2K |
| R907 | ERDS2TJ332 | 1/4W 3.3K |
| R908 | ERDS2TJ223 | 1/4W 22K |
| R909 | ERDS2TJ103 | 1/4W 10K |
| R910 | ERDS2TJ821 | 1/4W 820 |
| R911 | ERDS2TJ102 | 1/4W 1K |
| R912 | ERDS2TJ122 | 1/4W 1.2K |
| R913 | ERDS2TJ152 | 1/4W 1.5K |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R914 | ERDS2TJ182 | 1/4W 1.8K |
| R915 | ERDS2TJ222 | 1/4W 2.2K |
| R916-919 | ERDS2TJ103 | 1/4W 10K |
| R920-922 | ERDS2TJ102 | 1/4W 1K |
| R923 | ERDS2TJ391 | 1/4W 390 |
| R924 | ERDS2TJ102 | 1/4W 1K |
| R925 | ERDS2TJ221 | 1/4W 220 |
| R926 | ERDS2TJ101 | 1/4W 100 |
| R928-933 | ERDS2TJ102 | 1/4W 1K |
| R934 | ERDS2TJ101 | 1/4W 100 |
| R935 | ERDS2TJ102 | 1/4W 1K |
| R936 | ERDS2TJ101 | 1/4W 100 |
| R938 | ERDS2TJ102 | 1/4W 1K |
| R939 | ERDS2TJ101 | 1/4W 100 |
| R940, 941 | ERDS2TJ393 | 1/4W 39K |
| R942 | ERDS2TJ562 | 1/4W 5.6K |
| R943 | ERDS2TJ223 | 1/4W 22K |
| R944 | ERDS2TJ473 | 1/4W 47K |
| R945, 946 | ERDS2TJ102 | 1/4W 1K |
| R947, 948 | ERDS2TJ223 | 1/4W 22K |
| R949 | ERDS2TJ103 | 1/4W 10K |
| R950 | ERDS2TJ102 | 1/4W 1K |
| R951 | ERDS2TJ104 | 1/4W 100K |
| R952, 953 | ERDS2TJ102 | 1/4W 1K |
| R954 | ERDS2TJ101 | 1/4W 100 |
| R955 | ERDS2TJ824 | 1/4W 820K |
| R956 | ERDS2TJ101 | 1/4W 100 |
| R957 | ERDS2TJ102 | 1/4W 1K |
| R958 | ERDS2TJ471 | 1/4W 470 |
| R959 | ERDS2TJ103 | 1/4W 10K |
| R960 | ERDS2TJ472 | 1/4W 4.7K |
| R961 | ERDS2TJ103 | 1/4W 10K |
| R962 | ERDS2TJ473 | 1/4W 47K |
| R963-965 | ERDS2TJ472 | 1/4W 4.7K |
| R966 | ERDS2TJ123 | 1/4W 12K |
| R967 | ERDS2TJ472 | 1/4W 4.7K |
| R968, 969 | ERDS2TJ152 | 1/4W 1.5K |
| R971 | ERDS2TJ104 | 1/4W 100K |
| R972 | ERDS2TJ820 | 1/4W 82 |
| R973 | ERDS2TJ151 | 1/4W 150 |
| R974, 975 | ERDS2TJ473 | 1/4W 47K |
| R976 | ERDS2TJ272T | 1/4W 2.7K |
| R977 | ERDS2TJ102 | 1/4W 1K |
| R978-992 | ERDS2TJ104 | 1/4W 100K |
| R993-995 | ERDS2TJ102 | 1/4W 1K |
| R997, 998 | ERDS2TJ223 | 1/4W 22K |
| R999 | ERDS2TJ102 | 1/4W 1K |
| | | |
| | | CAPACITORS |
| | | |
| C101 | ECBT1C103NS5 | 16V 0.01U |
| C103 | ECBT1C103NS5 | 16V 0.01U |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C104, 105 | ECBT1H102KB5 | 50V 1000P |
| C106 | ECBT1C103NS5 | 16V 0.01U |
| C107 | ECBT1H473ZF5 | 50V 0.047U |
| C108 | ECBT1H100JC5 | 50V 10P (E, EB) |
| C108 | ECBT1H8R2KC5 | 50V 8.2P (EG, GC) |
| C109, 110 | ECBT1C103NS5 | 16V 0.01U |
| C111 | ECEA1EKA4R7B | 25V 4.7U |
| C112 | ECBT1C103NS5 | 16V 0.01U |
| C113 | ECBT1H102KB5 | 50V 1000P |
| C114 | RCE1HKA3R3BG | 50V 3.3U |
| C115 | ECEA1EKA4R7B | 25V 4.7U |
| C116 | ECBT1C822KS5 | 16V 8200P |
| C117 | ECQB1H561JF3 | 50V 560P (E, EB, EG) |
| C117 | ECQB1H102JF3 | 50V 1000P (GC) |
| C118, 119 | ECFR1C103KR | 16V 0.01U |
| C120, 121 | ECEA1HKA010B | 50V 1U |
| C122 | ECEA1HKA2R2B | 50V 2.2U |
| C123 | ECEA1HKA010B | 50V 1U |
| C124 | ECBT1H102KB5 | 50V 1000P |
| C125 | ECBT1H150JC5 | 50V 15P |
| C126 | ECBT1H473ZF5 | 50V 0.047U |
| C127 | RCE1CKA220BG | 16V 22U |
| C128 | ECBT1H102KB5 | 50V 1000P |
| C129, 130 | RCE0JKA101BV | 6.3V 100U |
| C132 | ECBT1H102KB5 | 50V 1000P |
| C133, 134 | ECBT1H270JU5 | 50V 27P |
| C135, 136 | ECBT1C103KS5 | 16V 0.01U |
| C137, 138 | ECBT1H561KB5 | 50V 560P |
| C139, 140 | ECBT1C682KR5 | 16V 6800P (E, EB, EG) |
| C139, 140 | ECBT1C562KR5 | 16V 5600P (GC) |
| C141-144 | ECEA1HKA010B | 50V 1U |
| C145 | ECBT1H220JC5 | 50V 22P |
| C148 | ECBT1C103NS5 | 16V 0.01U |
| C149 | ECBT1H104ZF5 | 50V 0.1U |
| C171, 172 | ECBT1H102KB5 | 50V 1000P |
| C173 | RCE1CKA220BG | 16V 22U |
| C174 | RCE1CKA100BG | 16V 10U |
| C181 | ECBT1H471KB5 | 50V 470P (E, EB, EG) |
| C196 | ECBT1H102KB5 | 50V 1000P |
| C201, 202 | ECBT1H180J5 | 50V 18P |
| C203, 204 | ECBT1H151KB5 | 50V 150P |
| C205, 206 | ECBT1H102KB5 | 50V 1000P |
| C207, 208 | RCE1AKA330BG | 10V 33U |
| C209, 210 | ECBT0J223MS5 | 6.3V 0.022U |
| C211, 212 | ECBT1C682KR5 | 16V 6800P |
| C213, 214 | RCE1CKA100BG | 16V 10U |
| C215 | ECBT1E103ZF | 25V 0.01U |
| C216 | RCE1AKA101BG | 10V 100U |
| C217 | ECBT1E103ZF | 25V 0.01U |
| C218 | RCE1AKA101BG | 10V 100U |
| C219-222 | ECBT1H101KB5 | 50V 100P |
| C223, 224 | ECBT1H104ZF5 | 50V 0.1U |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C225-227 | ECBT1H470J5 | 50V 47P |
| C231, 232 | ECBT1E103ZF | 25V 0.01U |
| C233, 234 | ECBT1H102KB5 | 50V 1000P |
| C235, 236 | ECBT1H101KB5 | 50V 100P |
| C305, 306 | RCE1CKA100BG | 16V 10U |
| C335, 336 | RCE1CKA100BG | 16V 10U |
| C337, 338 | RCE1CKA220BG | 16V 22U |
| C339, 340 | RCE1CKA100BG | 16V 10U |
| C341, 342 | ECEA1CKN100B | 16V 10U |
| C343 | RCE1CKA100BG | 16V 10U |
| C344, 345 | ECBT1H470J5 | 50V 47P |
| C348 | ECEA1CKA330B | 16V 33U |
| C349 | RCE1HKA3R3BG | 50V 3.3U |
| C350 | RCE0JKA470BG | 6.3V 47U |
| C351, 352 | RCE1CKA100BG | 16V 10U |
| C355 | ECEA1CKA330B | 16V 33U |
| C356 | ECBT1H104ZF5 | 50V 0.1U |
| C357 | RCE1AKA101BG | 10V 100U |
| C361, 362 | ECBT1H221KB5 | 50V 220P |
| C365 | RCE0JKA470BG | 6.3V 47U |
| C371, 372 | ECBT1H101KB5 | 50V 100P |
| C391, 392 | RCE1CM101BV | 16V 100U |
| C393, 394 | ECBT1H102KB5 | 50V 1000P |
| C509 | ECBT1E103ZF | 25V 0.01U |
| C510 | RCE1AKA101BG | 10V 100U |
| C550 | RCE0JKA101BV | 6.3V 100U (E, EG) |
| C551 | RCE1CKA220BG | 16V 22U (E, EG) |
| C551A | ECBT1H331KB5 | 50V 330P |
| C552 | RCE1CKA100BG | 16V 10U (E, EG) |
| C552A | ECBT1H331KB5 | 50V 330P |
| C553 | ECEA1EKA4R7B | 25V 4.7U (E, EG) |
| C553A | ECBT1E103ZF | 25V 0.01U |
| C554 | RCE1CKA100BG | 16V 10U (E, EG) |
| C554A | ECBT1E103ZF | 25V 0.01U |
| C555 | ECEA1EKA4R7B | 25V 4.7U (E, EG) |
| C556 | RCE1CKA100BG | 16V 10U (E, EG) |
| C557 | ECBT1H102KB5 | 50V 1000P (E, EG) |
| C558 | RCE0JKA101BV | 6.3V 100U (E, EG) |
| C559, 560 | ECEA1HKA010B | 50V 1U (E, EG) |
| C561 | ECFR1C223KR | 16V 0.022U (E, EG) |
| C562, 563 | ECFR1C333KR | 16V 0.033U (E, EG) |
| C564 | ECBT1C332KR5 | 16V 3300P (E, EG) |
| C565 | ECBT1C682KR5 | 16V 6800P (E, EG) |
| C566 | ECBT1C332KR5 | 16V 3300P (E, EG) |
| C567 | ECBT1C103KS5 | 16V 0.01U (E, EG) |
| C568-570 | ECBT1H102KB5 | 50V 1000P (E, EG) |
| C581, 582 | ECBT1H104ZF5 | 50V 0.1U |
| C601, 602 | ECKT1H223ZF | 50V 0.022U |
| C603 | ECA1EM102B | 25V 1000U ⚠ |
| C604 | RCE1EM471BV | 25V 470U ⚠ |
| C605, 606 | ECBT1E103ZF | 25V 0.01U |
| C607 | RCE1CKA100BG | 16V 10U |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C608 | RCE1CM101BV | 16V 100U |
| C609 | ECBT1H102KB5 | 50V 1000P |
| C610, 611 | ECBT1H104ZF5 | 50V 0.1U |
| C612 | RCE1EM471BV | 25V 470U ⚠ |
| C613 | ECBT1E103ZF | 25V 0.01U |
| C614 | RCE1CKA100BG | 16V 10U |
| C615 | ECA1EM101B | 25V 100U |
| C616 | ECA1HM470B | 50V 47U |
| C617 | ECA1HM470B | 50V 47U ⚠ |
| C618 | ECA1JM470B | 63V 47U |
| C619 | ECBT1E103ZF | 25V 0.01U |
| C620 | RCE1VKA100BG | 35V 10U |
| C622 | RCE1VKA100BG | 35V 10U |
| C631-636 | ECBT1H101KB5 | 50V 100P |
| C637 | ECBT1H102KB5 | 50V 1000P |
| C651, 652 | ECBT1H104ZF5 | 50V 0.1U |
| C653, 654 | ECBT1H102KB5 | 50V 1000P |
| C655 | RCE1CM101BV | 16V 100U |
| C656 | RCE1VM471BV | 35V 470U |
| C657 | ECBT1H102KB5 | 50V 1000P |
| C701-706 | ECBT1H101KB5 | 50V 100P |
| C707 | ECBT1H102KB5 | 50V 1000P |
| C709 | ECBT1H470J5 | 50V 47P |
| C711 | ECBT1H470J5 | 50V 47P |
| C712, 713 | ECBT1H104ZF5 | 50V 0.1U |
| C714, 715 | RCE1CKA100BG | 16V 10U |
| C716, 717 | ECBT1H104ZF5 | 50V 0.1U |
| C722, 723 | RCE1CKA100BG | 16V 10U |
| C801 | ECFR1C223KR | 16V 0.022U |
| C802 | ECFR1E473KR | 25V 0.047U |
| C803 | RCE0JKA221BV | 6.3V 220U |
| C804-807 | RCE1CKA100BG | 16V 10U |
| C808 | RCE0JKA221BV | 6.3V 220U |
| C809, 810 | ECEA1HKA010B | 50V 1U |
| C811, 812 | ECQV1H104JM3 | 50V 0.1U |
| C813 | RCE1HKAR47BG | 50V 0.47U |
| C814 | ECEA1VKA4R7B | 35V 4.7U |
| C815 | RCE1HKAR47BG | 50V 0.47U |
| C816 | ECEA1VKA4R7B | 35V 4.7U |
| C817 | ECEA1HKAR15B | 50V 0.15U |
| C818 | RCE1HKA3R3BG | 50V 3.3U |
| C819, 820 | ECQV1H154JM3 | 50V 0.15U |
| C821 | RCE1HKA3R3BG | 50V 3.3U |
| C822 | ECEA1HKAR15B | 50V 0.15U |
| C823 | ECEA1VKA4R7B | 35V 4.7U |
| C824 | RCE1HKAR47BG | 50V 0.47U |
| C825 | ECEA1VKA4R7B | 35V 4.7U |
| C826 | RCE1HKAR47BG | 50V 0.47U |
| C827, 828 | ECQV1H104JM3 | 50V 0.1U |
| C829 | RCE1CKA470BG | 16V 47U |
| C830 | ECQV1H474JM3 | 50V 0.47U |
| C831 | ECBA1H681KB5 | 50V 680P |
| C832 | ECBT1H560J5 | 50V 56P |
| C833, 834 | ECBT1H101KB5 | 50V 100P |
| C835 | ECEA1HKA2R2B | 50V 2.2U |
| C836 | ECEA1HKA010B | 50V 1U |
| C837 | RCE1CKA101BV | 16V 100U |
| C838 | ECBT1E223ZF | 25V 0.022U |
| C839 | ECA1AM471B | 10V 470U |
| C840 | RCE1CKA220BG | 16V 22U |
| C841, 842 | RCE1HKA3R3BG | 50V 3.3U |
| C843, 844 | RCE1CKA220BG | 16V 22U |
| C845 | RCE0JKA221BV | 6.3V 220U |
| C846 | ECEA1HKA010B | 50V 1U |
| C847 | ECQB1H393JF3 | 50V 0.039U |
| C848 | ECFR1E152KR | 25V 1500P |
| C849 | ECQV1H333JM3 | 50V 0.033U |
| C850 | RCE1CKA101BV | 16V 100U |
| C851 | ECBT1E223ZF | 25V 0.022U |
| C852 | ECBA1H681KB5 | 50V 680P |
| C853, 854 | RCE1HKA3R3BG | 50V 3.3U |
| C855-858 | ECBT1E103ZF | 25V 0.01U |
| C859, 860 | ECBT1H101KB5 | 50V 100P |
| C861, 862 | RCE1CKA100BG | 16V 10U |
| C863-866 | RCE1CKA220BG | 16V 22U |
| C867, 868 | RCE1CKA100BG | 16V 10U |
| C869 | ECEA1CKA330B | 16V 33U |
| C870 | RCE1CKA100BG | 16V 10U |
| C871, 872 | ECBT1H470J5 | 50V 47P |
| C873 | RCE0JKA470BG | 6.3V 47U |
| C875, 876 | RCE1CKA100BG | 16V 10U |
| C877 | RCE0JKA470BG | 6.3V 47U |
| C878 | ECBT1E103ZF | 25V 0.01U |
| C880 | RCE1AKA101BG | 10V 100U |
| C881 | ECA1CM221B | 16V 220U |
| C882 | RCE1CKA101BV | 16V 100U |
| C887 | ECBT1H102KB5 | 50V 1000P |
| C888, 889 | ECBT1H221KB5 | 50V 220P |
| C891 | ECEA1AN101XB | 10V 100U |
| C892 | ECBT1H221KB5 | 50V 220P |
| C893 | ECBT1E223ZF | 25V 0.022U |
| C901-904 | ECBT1H471KB5 | 50V 470P |
| C905, 906 | ECBT1H102KB5 | 50V 1000P |
| C907 | ECBT1H104ZF5 | 50V 0.1U |
| C908 | ECBT1E103ZF | 25V 0.01U |
| C909 | ECEA1HKS2R2B | 50V 2.2U |
| C910 | RCE1CKA100BG | 16V 10U |
| C911 | ECBT1H270JU5 | 50V 27P |
| C912 | ECBT1H220GC5 | 50V 22P |
| C915 | ECBT1E103ZF | 25V 0.01U |
| C916, 917 | ECEA1VKA330B | 35V 33U |
| C918 | ECBT1H104ZF5 | 50V 0.1U |
| C919 | RCE0JU102BV | 6.3V 1000U |
| C921 | ECA0JKF101B | 6.3V 100U |
| C923 | RCE0JKA221BV | 6.3V 220U |
| C924-926 | ECBT1H102KB5 | 50V 1000P |
| C928, 929 | ECBT1H101KB5 | 50V 100P |
| C930, 931 | ECBT1H102KB5 | 50V 1000P |

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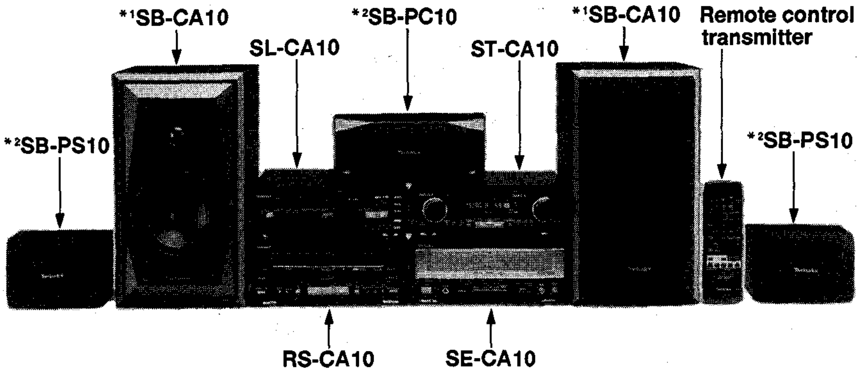
# Service Manual

Amplifier

# SE-CA10

Amplifier



**Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.**

## Colour

(K)...Black Type

## Area

| Suffix for Model No. | Area | Colour |
|---|---|---|
| (E) | Europe. | (K) |
| (EB) | Great Britain. | |
| (EG) | Germany and Italy. | |
| (GC) | Asia, Latin America, Middle Near east and Africa. | |
| (GN) | Oceania. | |

**System: SC-CA10**

## ■SPECIFICATIONS

### ■ Amplifier section

| | |
|---|---|
| **Power output** | |
| **DIN 1 kHz, THD 1%, both channel driven** | 2×50 W (6Ω) |
| **RMS 1 kHz, THD 10%, both channel driven** | |
| **[For (E, EB, EG, GN) areas]** | 2×70 W (6Ω) |
| **[For (GC) area]** | 2×65W (6Ω) |
| **PRO LOGIC mode** | |
| **DIN 1 kHz, THD 1%** | |
| **MAIN (both channels driven)** | 2×40 W (6Ω) |
| **SURROUND** | 40 W (4Ω+4Ω) |
| **CENTER** | 40 W (8Ω) |
| **RMS 1 kHz, THD 10%** | |
| **MAIN (both channels driven)** | 2×50 W (6Ω) |
| **SURROUND** | 50 W (4Ω+4Ω) |
| **CENTER** | 50 W (8Ω) |
| **Total harmonic distortion** | |
| **Rated power at 1 kHz** | 1% (6Ω) |
| **Half power at 1 kHz** | 0.09% (6Ω) |
| **Load impedance** | |
| **MAIN** | 6Ω – 8Ω |
| **SURROUND** | 4Ω – 8Ω |
| **CENTER** | 8Ω |
| **S/N (rated power)** | |
| **MAIN** | 90 dB |

### ■General

| | |
|---|---|
| **Power consumption** | 235 W |
| **Power supply** | |
| **[For (E, EG) areas]** | 230 V, AC 50/60 Hz |
| **[For (EB, GN) areas]** | 230 – 240 V, AC 50/60 Hz |
| **[For (GC) area]** | 110/127/220/230 – 240 V, AC 50/60 Hz |
| **Dimensions (W×H×D)** | 270×118.5×341.5 mm |
| **Weight** | 5.2 kg |

**Note:**

Specifications are subject to change without notice.
Weight and dimensions are approximate.
Total harmonic distortion is measured by the digital spectrum analyzer.

| System | Tuner | CD changer | Amplifier | Cassette deck | Speakers |
|---|---|---|---|---|---|
| **SC-CA10** | ST-CA10 | SL-CA10 | **SE-CA10** | RS-CA10 | *1 SB-CA10<br>*2 SB-PT10<br>(SB-PC10+SB-PS10) |

＊1 Made in PAES
＊2 For (E, EB, EG) areas....Made in PAES
For (GC, GN) areas....Made in NABEL

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

**Technics®**

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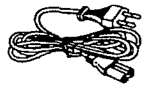
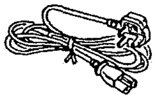
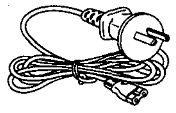
## ACCESSORIES

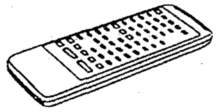
- AC power supply cord
  For (E, EG, GC) areas: (RJA0019-2K) .......... 1
  For (EB) area: (RJA0049-K) .......... 1
  For (GN) area: (RJA0036-K) .......... 1


(RJA0019-2K)

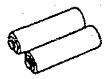

(RJA0049-K)


(RJA0036-K)

- Remote control transmitter
  For (E, EG) areas: (RAK-CH744WH) .......... 1
  For (EB, GC, GN) areas:
  (RAK-CH745WH) .......... 1



- Batteries
  (UM-4, "AAA", R03) .......... 2
  **Note:** These are available on sales route.



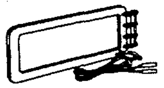
- Flat cable
  Long (REX0661) .......... 1
  Middle (REX0660) .......... 1
  Short (REX0608) .......... 1

(REX0661)

(REX0660)

(REX0608)

- AM (LW/MW) loop antenna
  (RSA0012) .......... 1



- FM indoor antenna
  For (E, EB, EG) areas: (RSA0007) .......... 1
  For (GC, GN) areas: (RSA0006) .......... 1

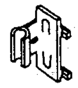
(RSA0007)

(RSA0006)

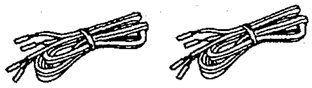
- Attachment plug
  For (EB) area only: (SJP9009) .......... 1

- Mounting screw
  (STN3+12AFZ) .......... 1

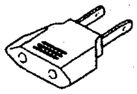
- Antenna holder
  (RMN0244) .......... 1



- Speaker cords
  (REE0393) .......... 2



- Power plug adapter
  For (GC) area only: (SJP5213-1) .......... 1



## BEFORE REPAIR AND ADJUSTMENT

(1) Turn off the power supply using a 10Ω, 10 W resistor, connect both ends of power supply capacitors (C701, C702) in order to discharge the voltage.

(2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 50/60 Hz in NO SIGNAL mode should be shown below with respect to supply voltage 230 V/240 V/110 V.

| Area | (E) (EG) | | (EB) (GN) | | (GC) | | |
|---|---|---|---|---|---|---|---|
| Power supply voltage | AC 230 V | | AC 240 V | | AC 110 V | | AC 240 V |
| Consumed current 50/60 Hz | 50 Hz | 80~230 mA | 50 Hz | 80~230 mA | 50 Hz | 200~500 mA | 100~250 mA |
| | 60 Hz | 64~184 mA | 60 Hz | 64~184 mA | 60 Hz | 160~400 mA | 80~200 mA |

## ■PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- ✻ No sound is heard when the power is switched ON.
- ✻ Sound stops during a performance.

The function of this circuitry is prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.
If this occurs, follow the procedure outlined below:

1. Switch OFF the power.
2. Determine the cause of the problem and correct it.
3. Switch ON the power once again.

**Note:**
When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

## ■CAUTION FOR AC MAIN LEAD

### [(EB) area code mode only]

For your safety, please read the following text carefully.

This applicance is supplied with a moulded three pin mains plug for your safety and convenience.
Ad 5-ampere fuse is fitted in this plug.
Should the fuse need to be replace please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTAd mark ◈ or the BSI mark ▽ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local

**CAUTION!**
IF THE FITTED MOULDED PLUG IS UNSUITABLED FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFETY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

### IMPORTANT

The wire in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

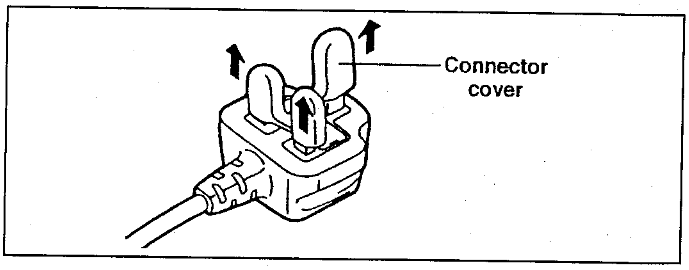
This apparatus was produced to BS 800.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

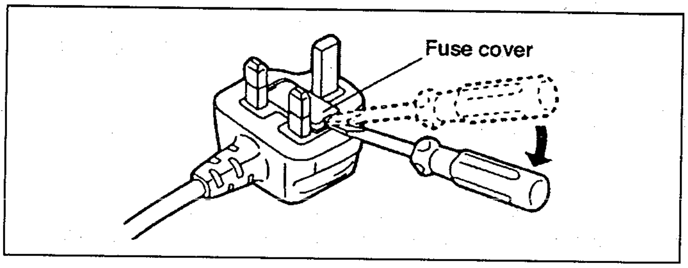
### Before use

Removal the connector cover as follows.

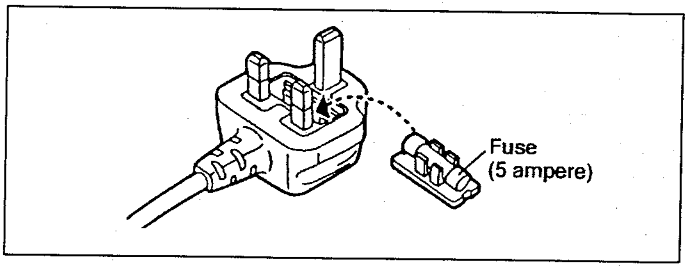


### Hoe to replace the fuse

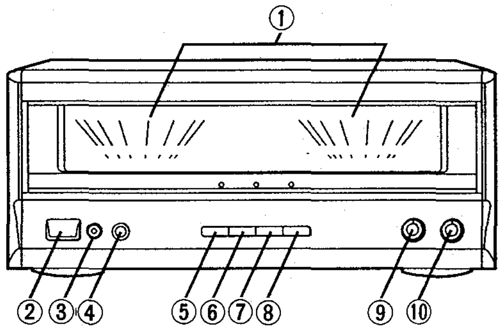
1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover.



# ■LOCATION OF CONTROLS



① **Output power meter**
Indicates the output (watts) of this unit.

② **Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

③ **Standby indicator (STANDBY)**
When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

④ **Headphones jack (PHONES)**

⑤ **DOLBY PRO LOGIC mode select button (MODE)**

⑥ **Test signal button (TEST)**

⑦ **Delay time adjust button (DELAY TIME)**

⑧ **Center mode select button (CENTER MODE)**

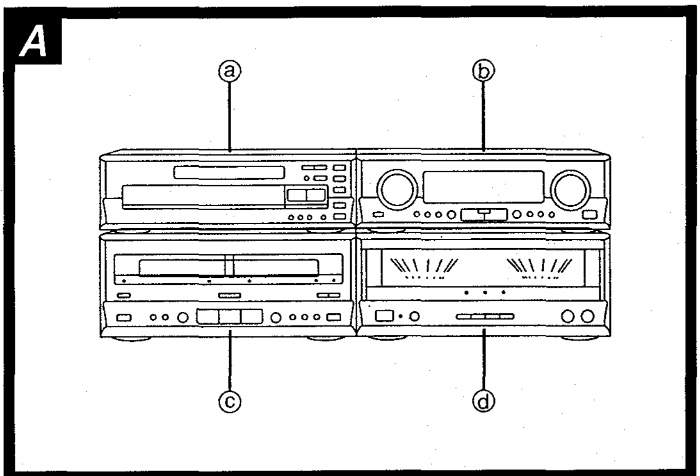
⑨ **Bass control (BASS)**

⑩ **Treble control (TREBLE)**

# ■INSTALLATION

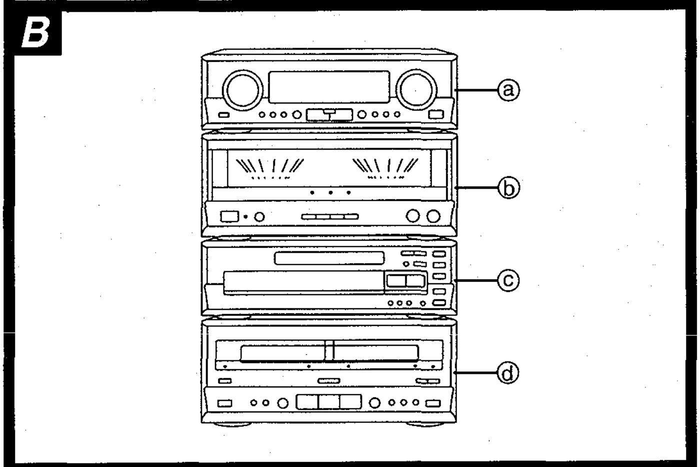
## *Stacking the components*

### *Horizontal stacking* A



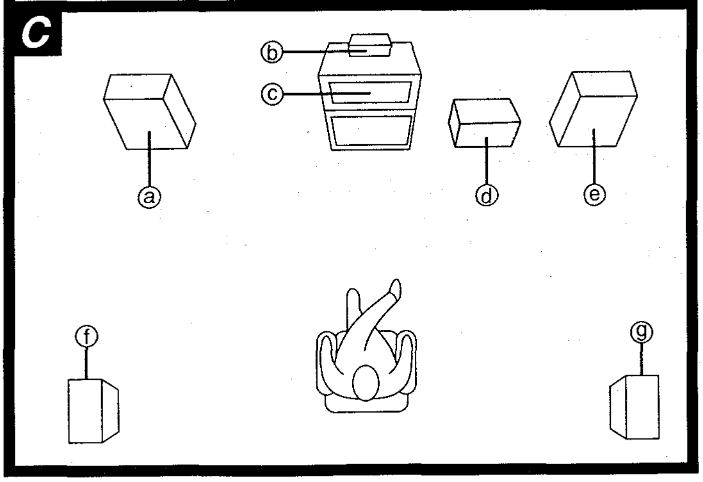
ⓐ CD changer (SL-CA10)
ⓑ Tuner (ST-CA10)
ⓒ Cassette deck (RS-CA10)
ⓓ Amplifier (SE-CA10)

### *Vertical stacking* B



ⓐ Tuner (ST-CA10)
ⓑ Amplifier (SE-CA10)
ⓒ CD changer (SL-CA10)
ⓓ Cassette deck (RS-CA10)

## *Placement of speakers* C



As well as enjoying normal stereo reproduction with the left and right front speakers, a center speaker and surround speakers can also be connected to the unit in order to enjoy the sound performance of DOLBY PRO LOGIC Systems.

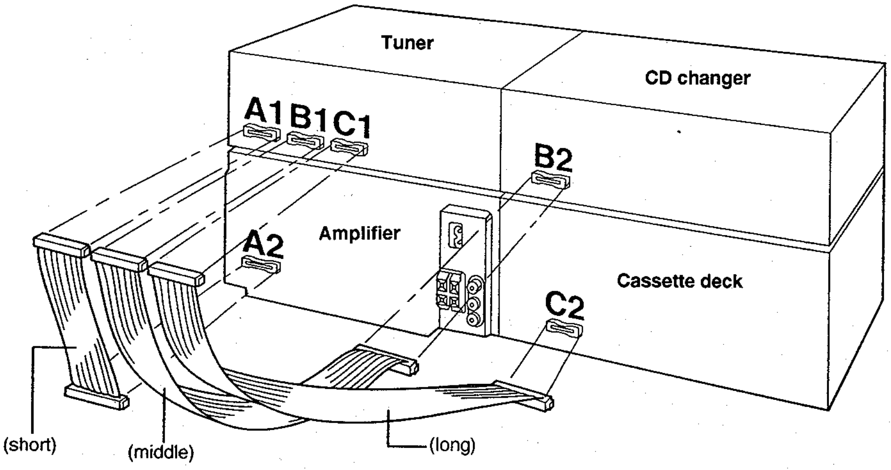
We recommend that surround speakers be placed on the side of or slightly behind the listener, and about one meter higher than ear level.
However the position should be adjusted to your personal preference, because the effect varies to some degree depending upon the type of music and the music source.

ⓐ Front speaker (Left) (SB-CA10)
ⓑ Center speaker (SB-PC10)
ⓒ TV (not included)
ⓓ This system
ⓔ Front speaker (Right) (SB-CA10)
ⓕ Surround speaker (Left) (SB-PS10)
ⓖ Surround speaker (Right) (SB-PS10)

**Caution**
**Use these speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speaker, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.**

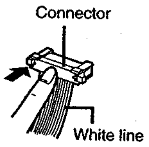
# ■CONNECTIONS

## ● FLat cable (included) connections

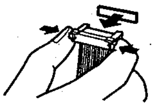

Tuner
CD changer
A1 B1 C1
B2
A2
Amplifier
Cassette deck
C2
(short)
(middle)
(long)

**Before making connections:**
Make sure the white line on the cable is on the right side.

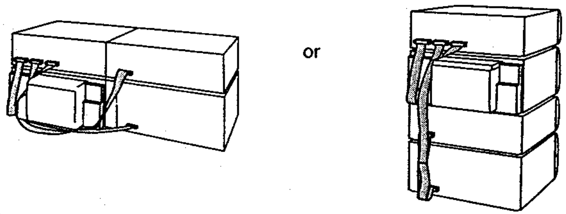
**To unplug cables:**
Hold the connector from both ends.


Connector
White line

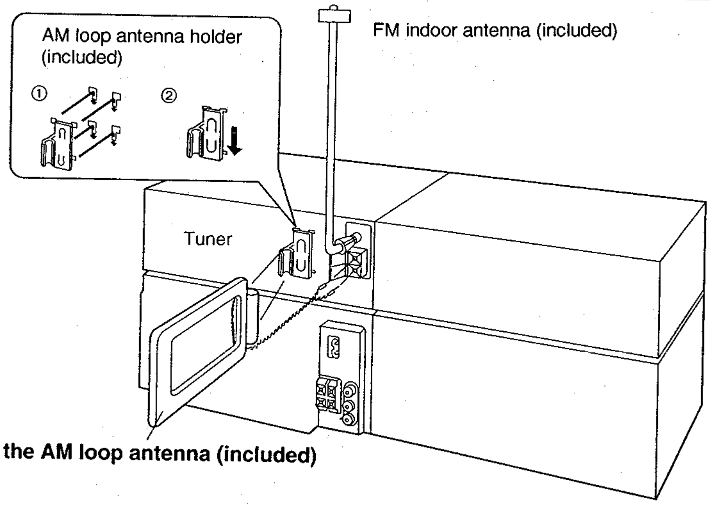
**Note** **Do not try connecting or disconnecting the flat cables while the power is switched to ON.**



**After connection:**
Fold and press the cable as flat to the back of the unit as possible. (To minimize noise pickup while listening an MW/LW broadcast)

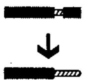


## ● Antenna connections

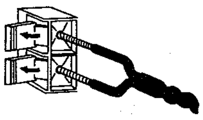

AM loop antenna holder (included)
①
②
FM indoor antenna (included)
Tuner

How to install the AM loop antenna (included)

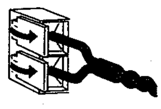
① Strip off the outer covering.



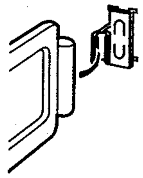
② Insert the wire.



③ Close the lever.

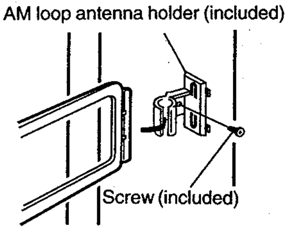


④ Attach the AM loop antenna to the

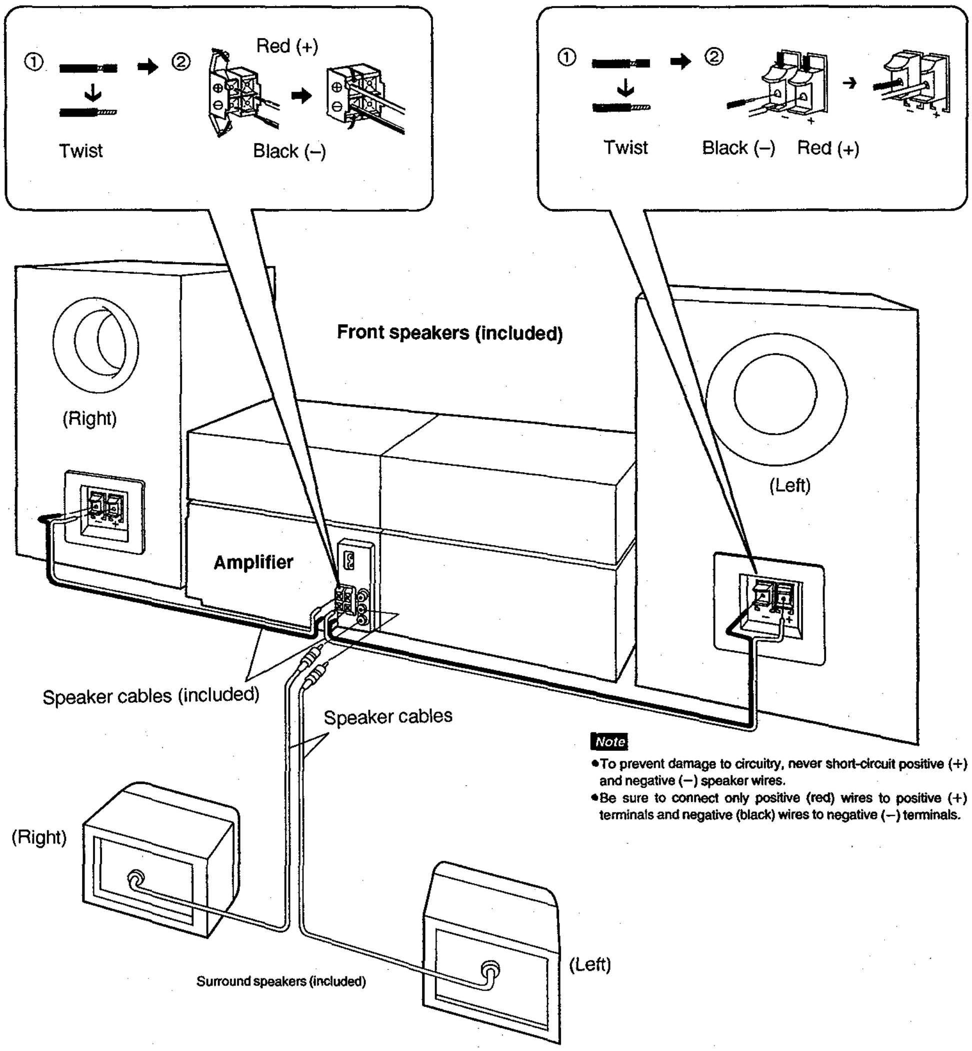


**Note**
- To minimize noise pickup, bundle the loop antenna cord using a tape or so to keep the flat cables away from the AM loop antenna cord.
- You may attach the antenna holder to a rack or other structure.

**• When mounting the antenna to a column or rack**


AM loop antenna holder (included)
Screw (included)

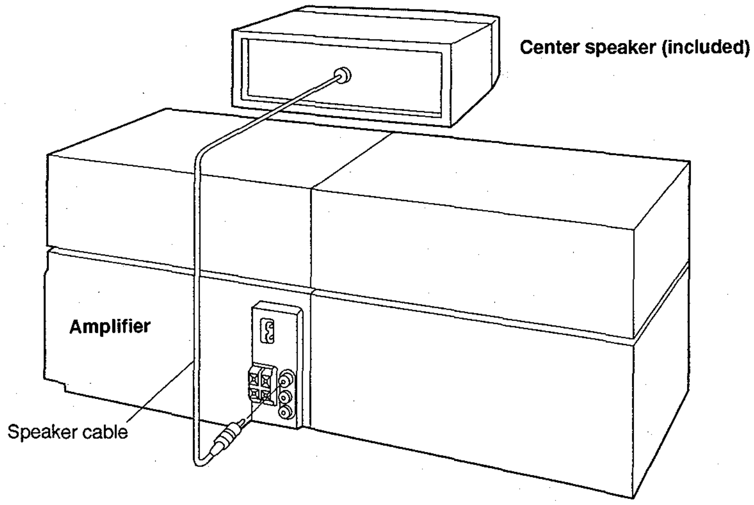
## ● Connection of front and surround speakers


① Twist ② Red (+) Black (–)
① Twist ② Black (–) Red (+)
Front speakers (included)
(Right)
(Left)
Amplifier
Speaker cables (included)
Speaker cables
(Right)
(Left)
Surround speakers (included)

**Note**

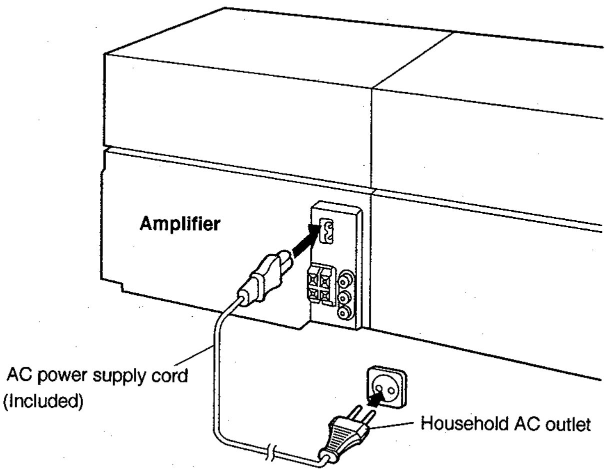
- To prevent damage to circuitry, never short-circuit positive (+) and negative (–) speaker wires.
- Be sure to connect only positive (red) wires to positive (+) terminals and negative (black) wires to negative (–) terminals.

## ● Connection of center speaker

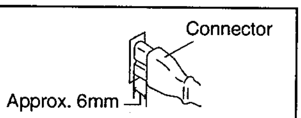

Center speaker (included)
Amplifier
Speaker cable

## • Connection of AC power supply cord

- Plug the cord into an outlet only after all other connections have been made.


Amplifier
AC power supply cord
(Included)
Household AC outlet

[For (E, EG, GN) areas.]


Connector
Approx. 6mm

**Insertion of Connector:**

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.

**[For (EB) area only]**

**BE SURE TO READ THE CAUTION FOR AC POWER SUPPLY CORD ON PAGE 3 BEFORE THE FOLLOWING CONNECTIONS.**

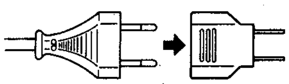
**[For (GC) area only]**

Set the voltage selector to the voltage setting for the area in which the unit will be used.
[Use a minus (–) screwdriver]

**Note**

If the power supply in your area is 117 V or 120 V, set to the "127 V" position.
Note that this unit will be seriously damaged if this setting is not made correctly.

If the power plug will not fit your socket, use the power plug adapter (included).



## • Optional antenna connections

### *FM outdoor antenna (not included)* A

The outdoor antenna should be used when using this unit in mountainous areas or in spaces enclosed by reinforced concrete where the FM indoor antenna (included) does not provide satisfactory reception.

**Note**

An outdoor antenna should be installed by a qualified technician only.

### *AM (MW/LW) outdoor antenna (not included)* B

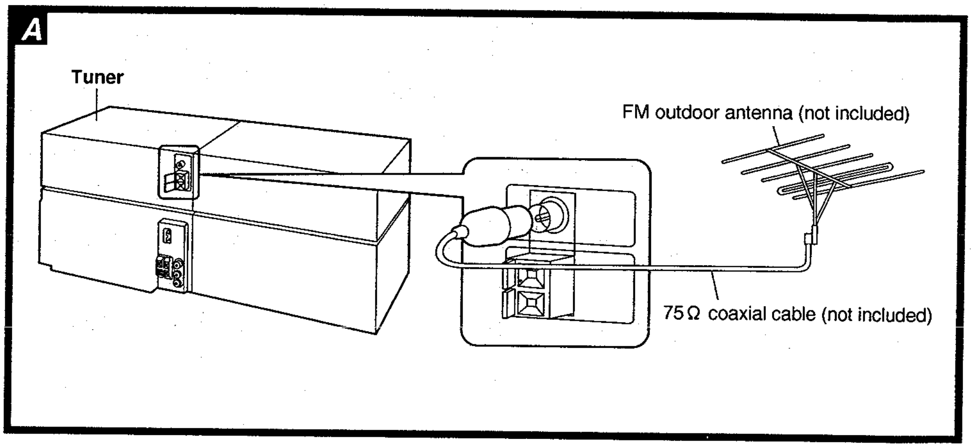
The outdoor antenna should be used when using this unit in mountainous areas or in spaces enclosed by reinforced concrete where the AM loop antenna (included) does not provide satisfactory reception.

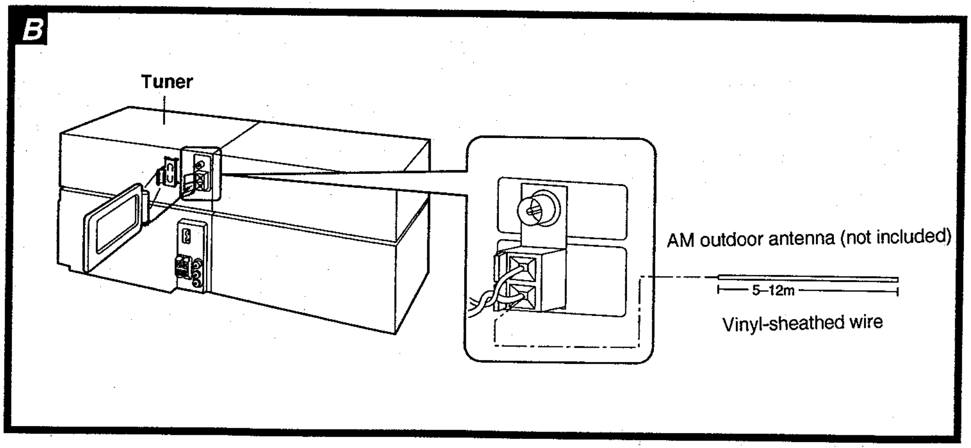
Use 5–12 m of vinyl-sheathed wire horizontally at the window, or a convenient location.

When the unit is not in use, disconnect the outdoor antenna to prevent possible damage from lightning. Never use an outdoor antenna during an electrical storm.

**Note**

Be sure to connect the AM loop antenna even when an outdoor antenna is used.

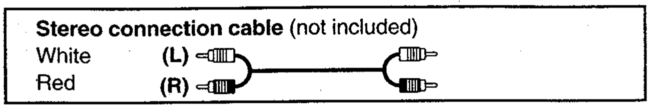

A
Tuner
FM outdoor antenna (not included)
75 Ω coaxial cable (not included)

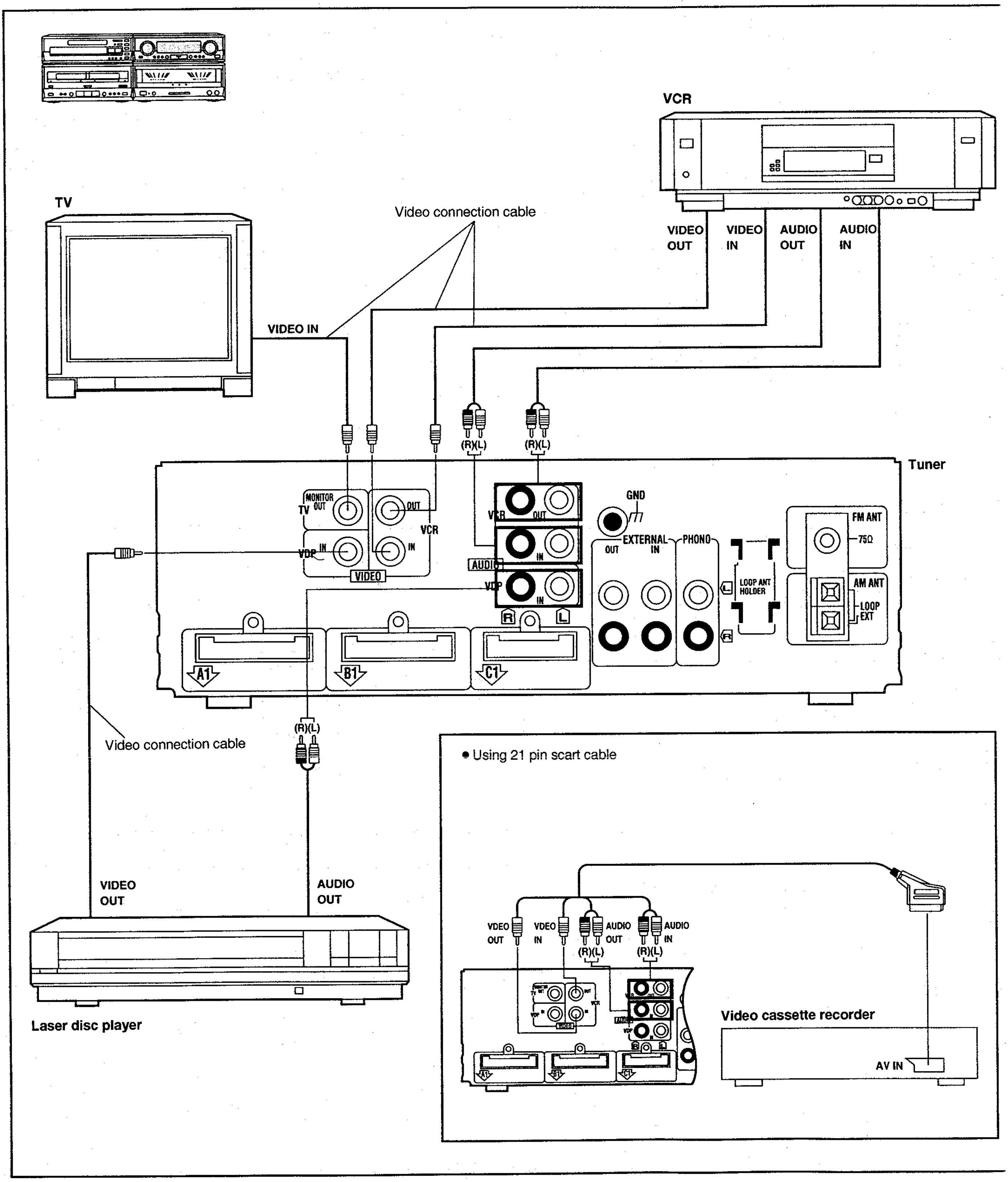

B
Tuner
AM outdoor antenna (not included)
5–12m
Vinyl-sheathed wire

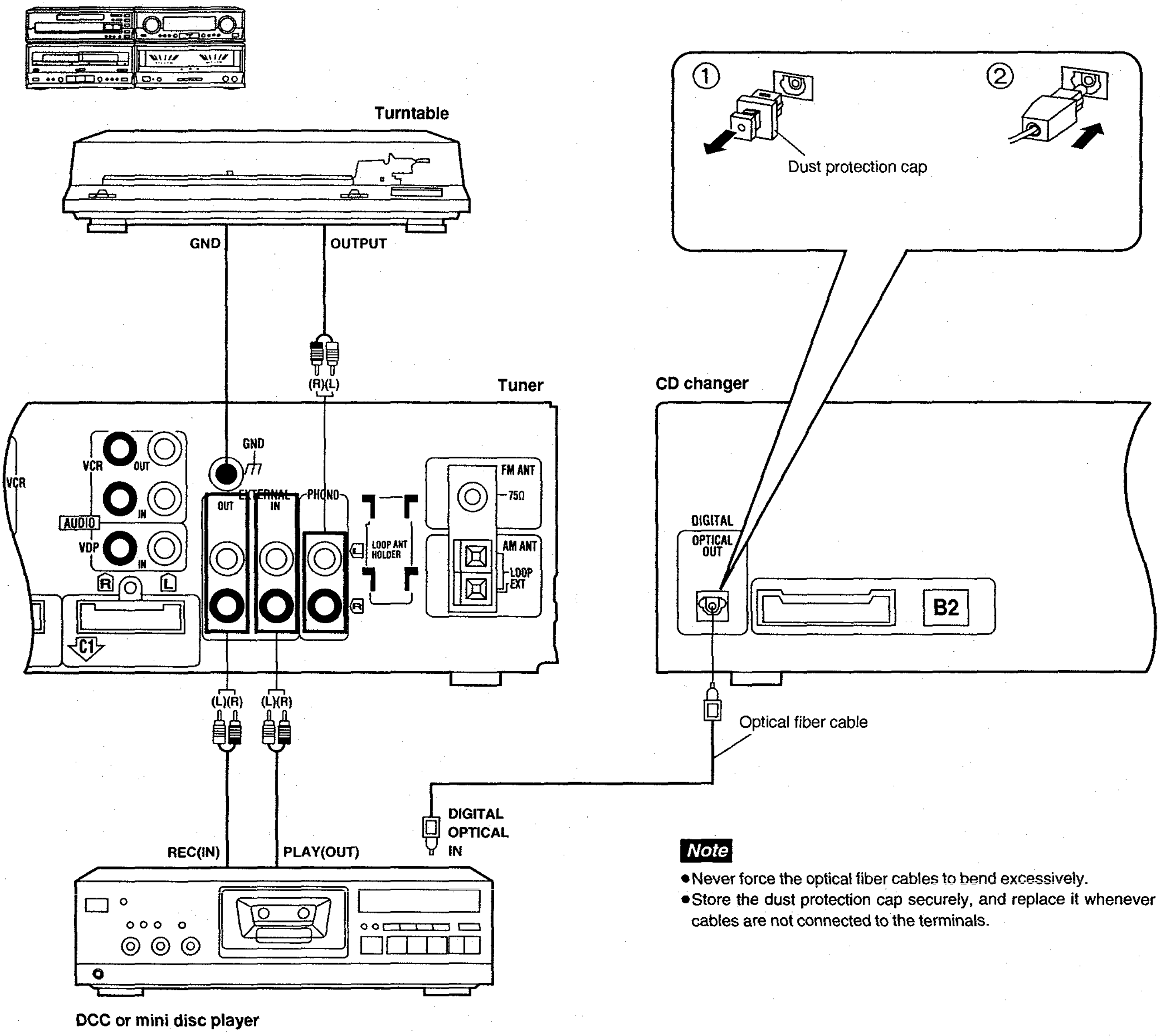
## • External unit connections

- Make sure that the power supply for all components has been turned off before making any connections.
- For details, refer to the operating instructions of the units which are to be connected.
- All peripheral components and cables sold separately.

**Stereo connection cable** (not included)


White
(L)
Red
(R)


VCR
TV
Video connection cable
VIDEO OUT
VIDEO IN
AUDIO OUT
AUDIO IN
VIDEO IN
(R)(L)
(R)(L)
Tuner
MONITOR OUT
TV
VDP
IN
OUT
VCR
IN
VIDEO
VCR
OUT
IN
AUDIO
VDP
IN
R
L
GND
EXTERNAL
OUT
IN
PHONO
LOOP ANT HOLDER
FM ANT
75Ω
AM ANT
LOOP
EXT
A1
B1
C1
Video connection cable
(R)(L)
VIDEO OUT
AUDIO OUT
Laser disc player
• Using 21 pin scart cable
VIDEO OUT
VIDEO IN
AUDIO OUT
AUDIO IN
(R)(L)
(R)(L)
Video cassette recorder
AV IN


Turntable
GND
OUTPUT
(R)(L)
Tuner
CD changer
①
②
Dust protection cap
VCR
VCR
OUT
IN
AUDIO
VDP
IN
R
L
C1
GND
EXTERNAL
OUT
IN
PHONO
L
R
LOOP ANT HOLDER
FM ANT
75Ω
AM ANT
LOOP
EXT
DIGITAL
OPTICAL
OUT
B2
Optical fiber cable
(L)(R)
(L)(R)
DIGITAL
OPTICAL
IN
REC(IN)
PLAY(OUT)
DCC or mini disc player

**Note**

- Never force the optical fiber cables to bend excessively.
- Store the dust protection cap securely, and replace it whenever cables are not connected to the terminals.

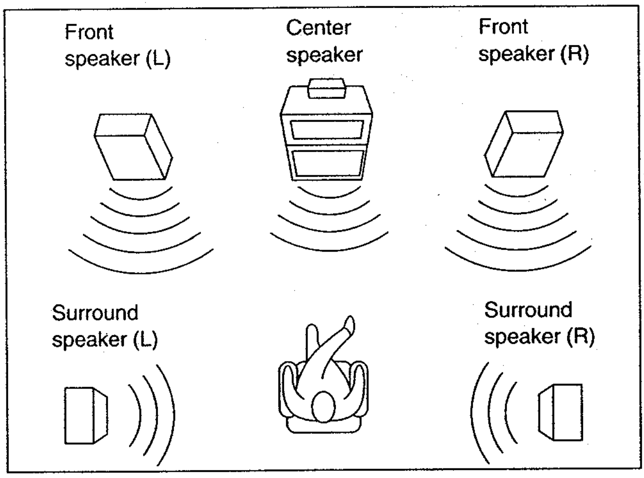
# ■USING THE DOLBY PRO LOGIC SURROUND

By combining front, center and surround speakers, you can enjoy the SURROUND mode which conveys a feeling of presence or the 3 STEREO mode which conveys a feeling of orientation.

## *SURROUND*

By reproducing the feeling of depth and movement of sound, video software or compact discs recorded with Dolby Surround provide the listener with a feeling of presence like that of a movie theater.

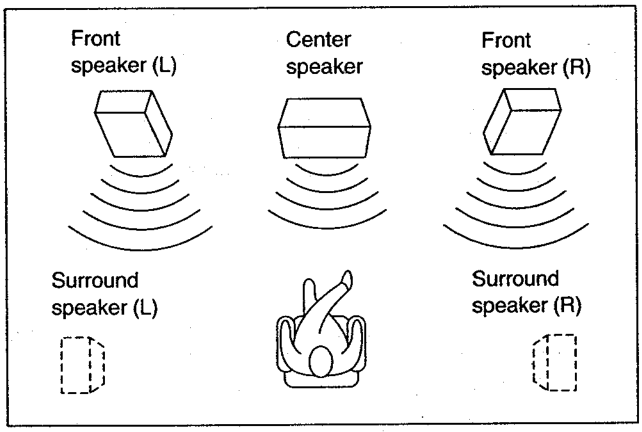
To enjoy SURROUND, be sure to connect the surround speakers.


Front speaker (L)
Center speaker
Front speaker (R)
Surround speaker (L)
Surround speaker (R)

## *3 STEREO*

You can enjoy audio/video sources with clear sound, more presence and a good feeling of orientation. 3 STEREO can be used with sources not recorded in DOLBY SURROUND.

To enjoy 3 STEREO, be sure to connect the center speaker.


Front speaker (L)
Center speaker
Front speaker (R)
Surround speaker (L)
Surround speaker (R)

## *Setting the center mode*

For Dolby Pro Logic systems, center mode setting is necessary to play back bass sounds effectively.
Set the center mode in accordance with the size of your center speaker.

1. **Switch on the power.**
2. **Press MODE to select "SURROUND" or "3 STEREO".**
   Each time you press the button, the display will change as follows:
   SURROUND→3 STEREO→OFF
3. **Press CENTER MODE to select "NORMAL" mode.**
   Each time you press the button, the display will change as follows:
   NORMAL→WIDE→PHANTOM

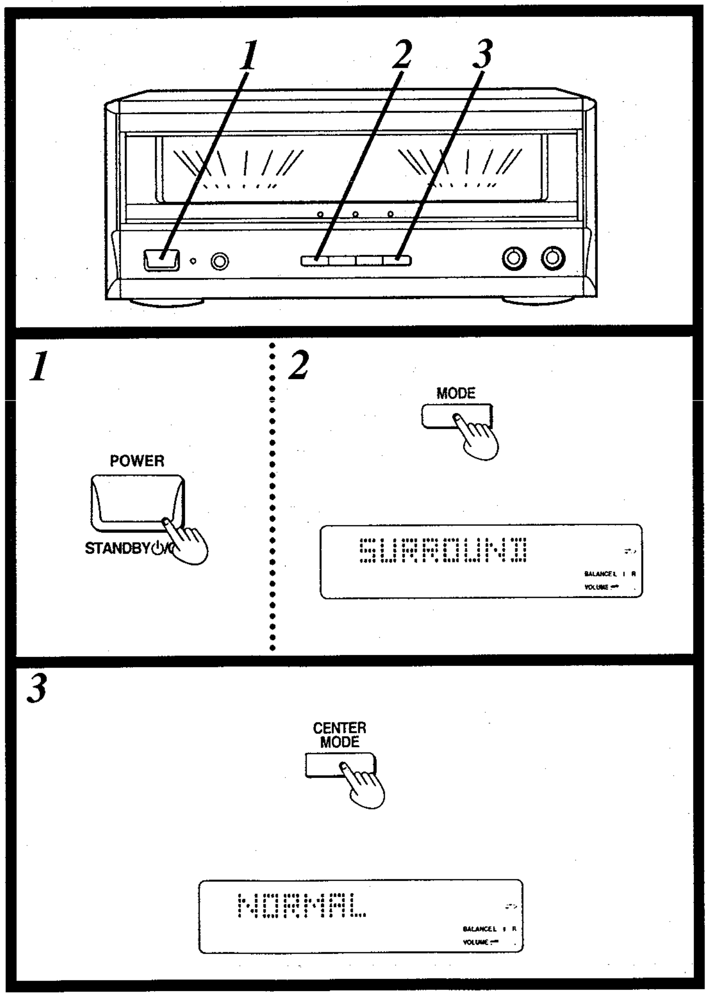
**Note**

"PHANTOM" will not be displayed when you select "3 STEREO" in step 2.

**NORMAL:**
When the center speaker is smaller than the front speakers
**WIDE:**
When the center speaker is the same or larger size as the front speakers
**PHANTOM:** **SURROUND only**
When no center speaker is connected.

**Note**

In the PHANTOM mode, the sound which would have been sent to the center speaker will be divided equally between both the left and right front speakers.


1
2
3
1
POWER
STANDBY⏻/I
2
MODE
SURROUND
3
CENTER MODE
NORMAL

# ■ADJUSTING SPEAKER OUTPUT LEVEL

In order to reproduce the movement of the sound and its clear orientation, it is important to adjust the output level of each speaker. Adjust output to the correct levels while listening to the test signal. Before starting, check your front speakers are correctly balanced.

*1* **Press MODE to select "SURROUND" or "3 STEREO".**

*2* **Press TEST to output a test signal.**

The test signal is emitted in the following order:

**For SURROUND mode**

Front speaker (left)→Center speaker
↑ ↓
Surround speakers (left, right)←Front speaker (right)

**Note**

The test signal is not emitted from the center speaker when the center mode is on PHANTOM.

**For 3 STEREO mode**

Front speaker (left)→Center speaker
↑
Front speaker (right)←

*3* **Turn VOLUME to set the volume level normally used for enjoying the source.**

*4* **Press CENTER (–) or (+) or SURROUND (–) or (+) on the remote control to adjust the output level balance.**

Adjust the output level of each speaker from the listening position until they are all identical.

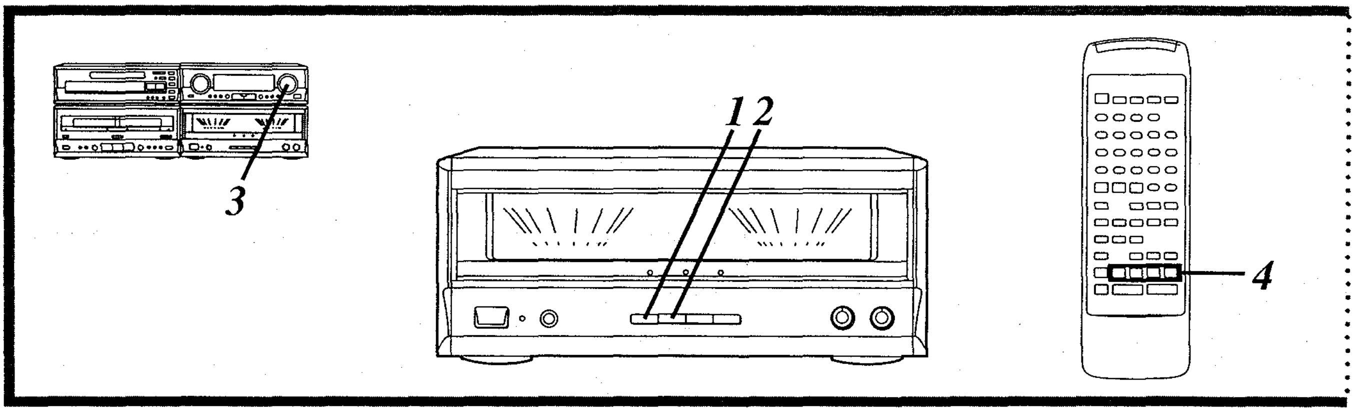
Output levels can be varied within a range of ±12 dB with front speaker output level serving as the zero point.

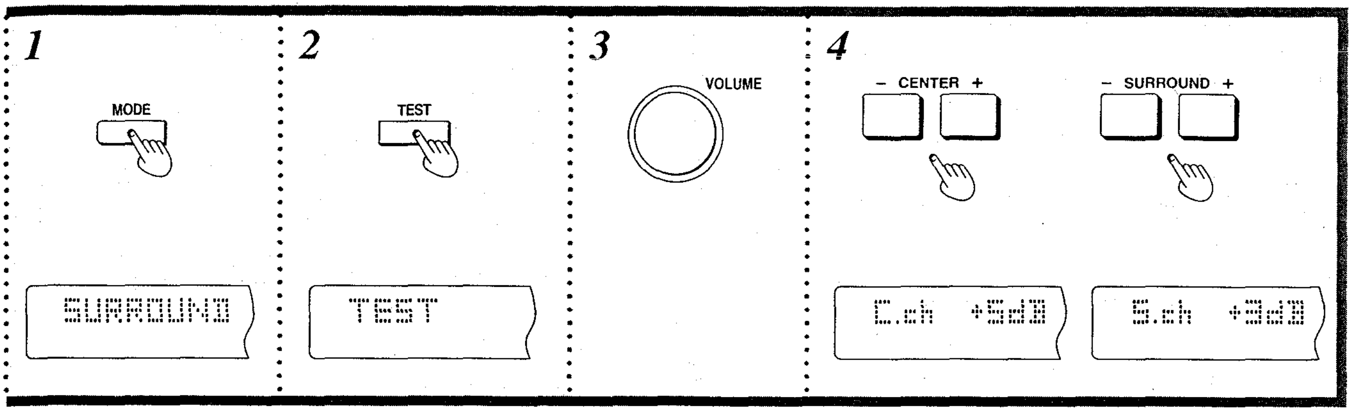
**Note**

- The test signal is output only by the speaker you are now adjusting and does not repeat the sequence until adjustments are complete.
- Remember you cannot adjust output level of the surround speakers if you selected the 3 STEREO mode in step 1.

---

**To stop the test signal:**
Press TEST.





# ■ADJUSTING THE DELAY TIME

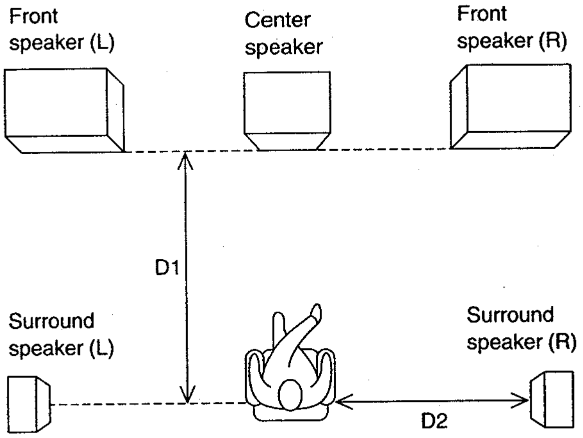
**When enjoying with SURROUND only**

Adjust the sound from the surround speakers until the proper effect is produced.

1. **Press MODE to select "SURROUND".**
2. **Press DELAY TIME to set to the suitable time.**
   When the button is pressed, the current delay time is displayed, pressing it again changes the delay time.
   Each time the button is pressed, the delay time will increase by 5 ms.
   15 ms→20 ms→25 ms→30 ms
   ↑________________________↓

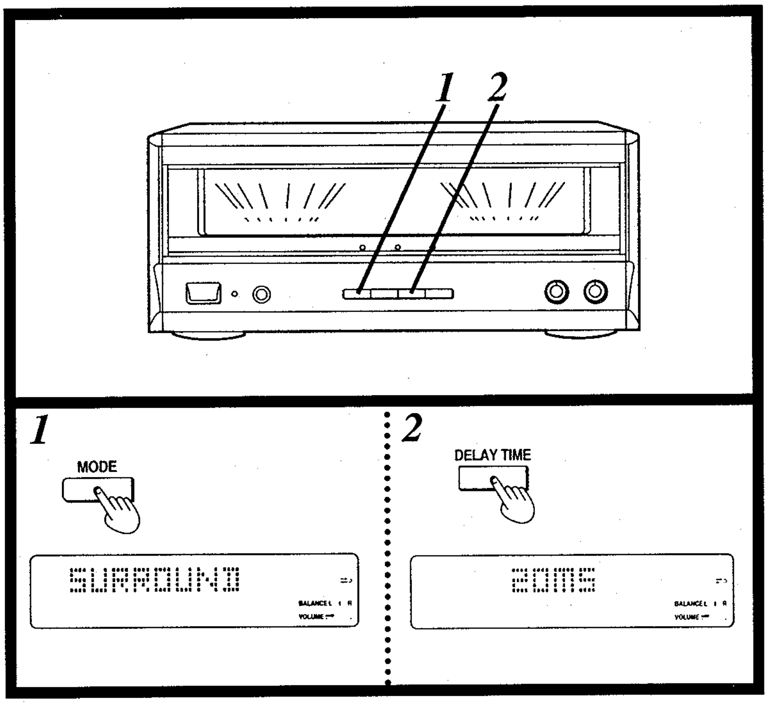
To calculate the delay time, refer to the calculation methods.

The standard setting is 20 ms.


Front speaker (L)
Center speaker
Front speaker (R)
D1
Surround speaker (L)
Surround speaker (R)
D2

D1: Distance from front speakers
D2: Distance from surround speakers

**If D1 is equal to or less than D2:**
Set to 15 ms.
**If D2 is less than D1:**
Start at 15 ms and increase by 5 ms for every 1.5 m of difference between D1 and D2.


1
2
1
MODE
SURROUND
BALANCE L R
VOLUME
2
DELAY TIME
20MS
BALANCE L R
VOLUME

# ■ENJOYING WITH SURROUND OR 3 STEREO

Before trying anything, have you set the center mode and adjusted speaker output level and adjusted the delay time?
When viewing a video, turn on the power supply for the TV and set the TV to video mode.

1. **Press MODE to select "SURROUND" or "3 STEREO".**
2. **Press INPUT SELECTOR to select the desired external source.**
   Each time you press this button, sound sources will be switched as follows.
   TUNER→CD→TAPE→EXT
   ↑ ↓
   PHONO←VDP←VCR

   These indications correspond to terminals on the tuner's rear panel. Switch the displayed indication to the source you want to use.

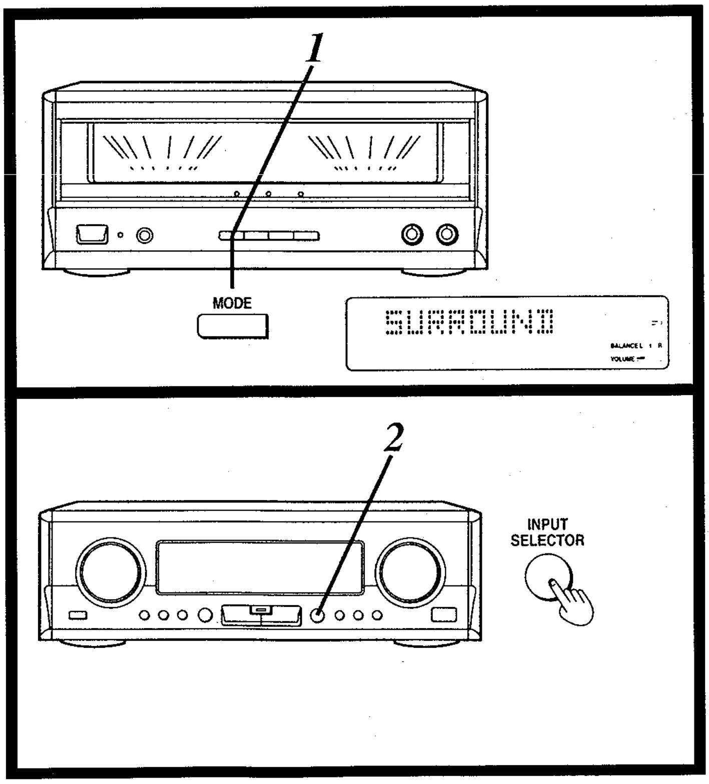
   **Note**
   You can not enjoy SURROUND or 3 STEREO in the tuner mode.
3. **Start the desired source.**
   To operate external sources, see the instruction manual provided with the specific unit.

**Note**
When employing SURROUND, use software recorded in Dolby Surround.

---

**To turn off the DOLBY PRO LOGIC systems:**
Press MODE to select "OFF".

**Note**
You cannot record acoustical effects produced in the SURROUND and 3 STEREO modes.


1
MODE
SURROUND
BALANCE L R
VOLUME
2
INPUT SELECTOR

# ■ Operation Check and Main Component Replacement Procedures

**NOTE**

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Illustrated screws are equivalent to actual size.
5. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

## • Contents

**•Checking Procedures for each P.C.B.**

Page.

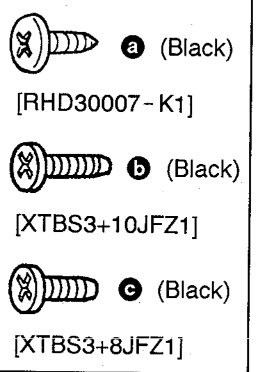
1. Checking for the operation P.C.B.. •••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••• 13.
2. Checking for the main P.C.B.. •••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••• 14.

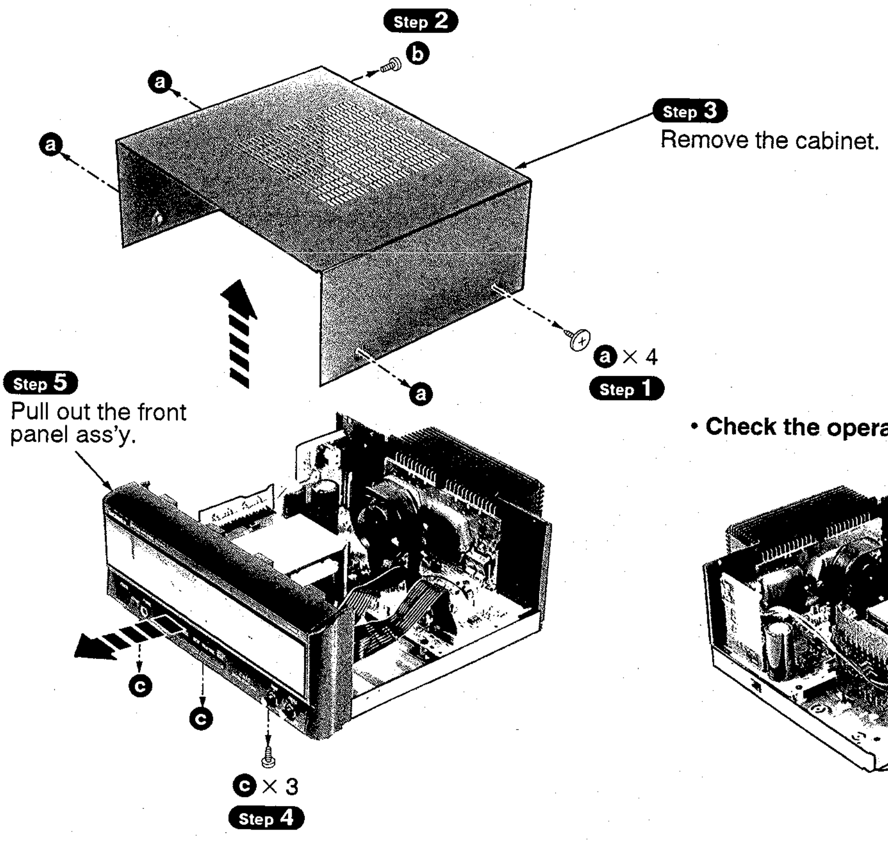
**•Main Component Replacement Procedures**

1. Replacement for the power IC and regulator transistor. ••••••••••••••••••••••••••••••••••••••• 14,15.
2. Replacement for the meter unit. ••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••15.

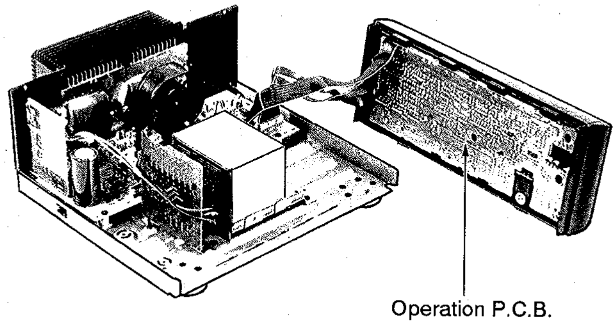
# ■ Checking Procedure for each P.C.B.

### 1. Checking for the operation P.C.B.

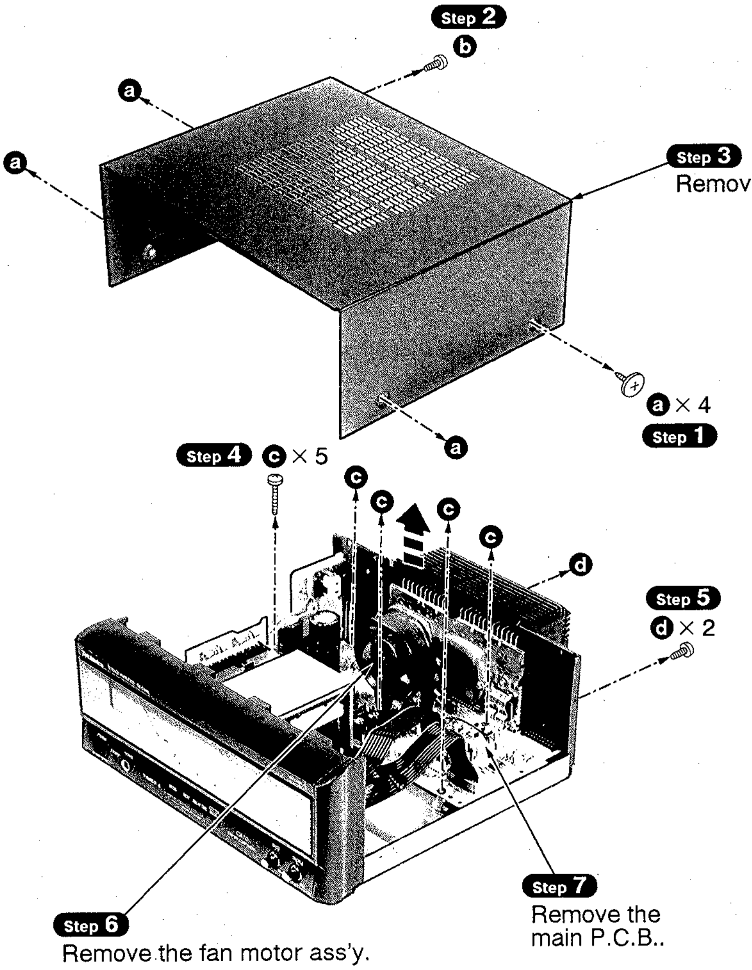

ⓐ (Black)
[RHD30007-K1]
ⓑ (Black)
[XTBS3+10JFZ1]
ⓒ (Black)
[XTBS3+8JFZ1]

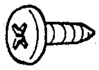

Step 2
ⓑ
ⓐ
ⓐ
Step 3
Remove the cabinet.
ⓐ × 4
Step 1
ⓐ
Step 5
Pull out the front panel ass'y.
ⓒ
ⓒ
ⓒ × 3
Step 4

• **Check the operation P.C.B. as shown below.**


Operation P.C.B.

## 2. Checking for the main P.C.B.


Step 2
b
a
a
Step 3
Remove the cabinet.
a × 4
Step 1
a
Step 4 c × 5
c
c
c
c
d
Step 5
d × 2
Step 6
Remove the fan motor ass'y.
Step 7
Remove the
main P.C.B..


**a** (Black)

[RHD30007-K1]

**b** (Black)

[XTBS3+10JFZ1]

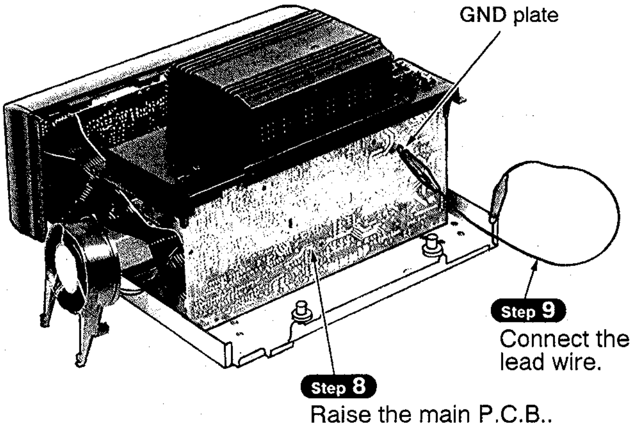
**c**

[XTB3+20JFZ] (Black)

**d** (Black)

[XTB3+10JFZ]

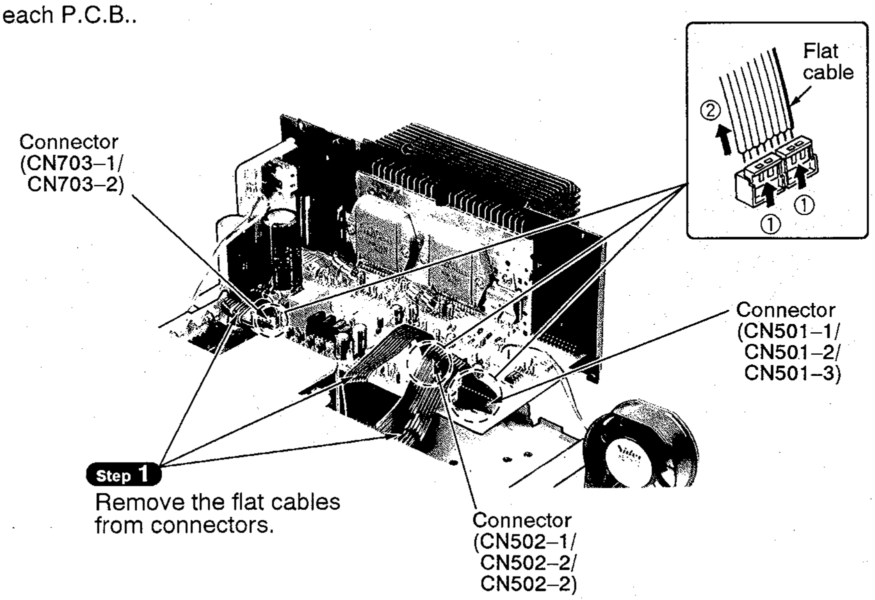
- **Check the main P.C.B. as shown below.**

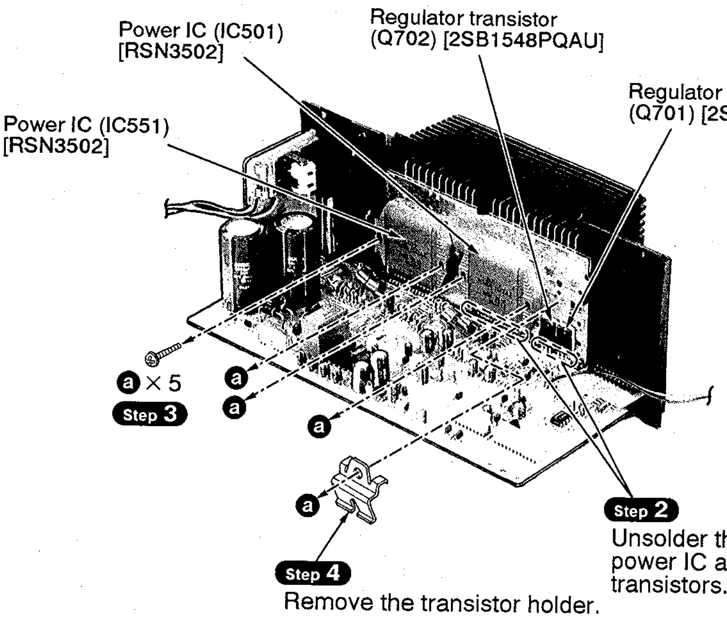

GND plate
Step 9
Connect the
lead wire.
Step 8
Raise the main P.C.B..

# Main Component Replacement Procedures

## 1. Replacement for the power IC and regulator transistor

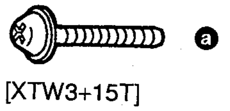
- Follow the item 2 ( Step 1 ~ Step 7 ) checking procedures for each P.C.B..


Connector
(CN703-1/
CN703-2)
Flat
cable
②
①
①
Connector
(CN501-1/
CN501-2/
CN501-3)
Step 1
Remove the flat cables
from connectors.
Connector
(CN502-1/
CN502-2/
CN502-2)


Power IC (IC501)
[RSN3502]
Regulator transistor
(Q702) [2SB1548PQAU]
Power IC (IC551)
[RSN3502]
Regulator transistor
(Q701) [2SD2374PQAU]
a × 5
Step 3
a
a
a
a

**Step 2**
Unsolder the terminals of power IC and regulator transistors.

**Step 4**
Remove the transistor holder.



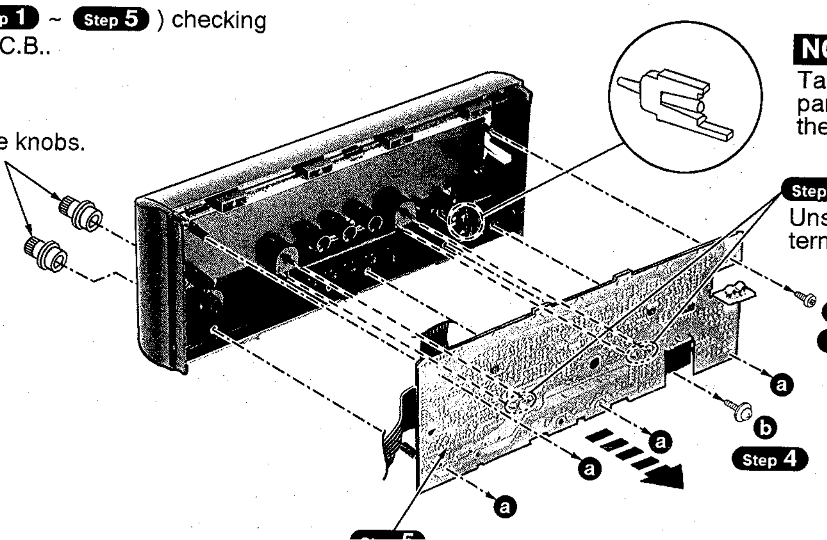
[XTW3+15T]

**NOTE**
When mounting the power IC or regulator transistor, apply silicone compound (RFKX0002) to the rear side of power IC or regulator transistors.

## 2. Replacement for the meter unit

- Follow the item 1 ( Step 1 ~ Step 5 ) checking procedures for each P.C.B..

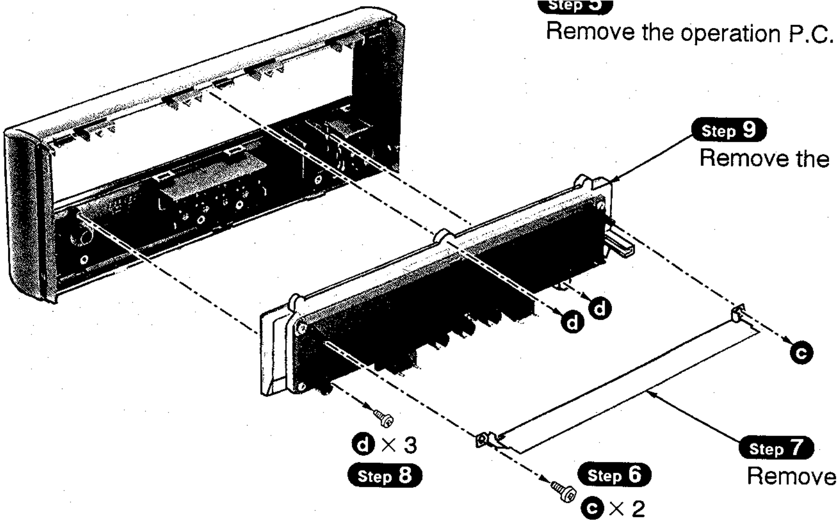
**Step 1**
Pull out the knobs.


a × 5
Step 3
a
b
Step 4
a
a
a

**NOTE**
Take care not to lose the panel light when removing the operation P.C.B..

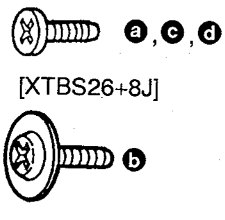
**Step 2**
Unsolder the terminals (4points).

**Step 5**
Remove the operation P.C.B..


d
d
c
d × 3
Step 8
Step 6
c × 2

**Step 9**
Remove the meter unit [RSE0007A].

**Step 7**
Remove the angle.

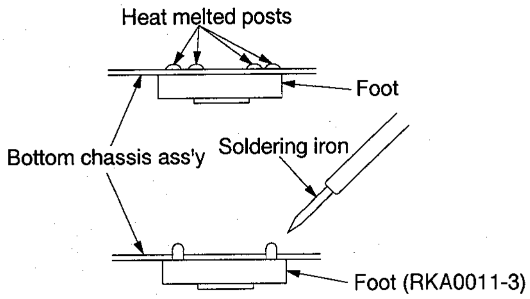


[XTBS26+8J]

[RHD26016]

## REPLACEMENT OF THE FOOT

1. Remove the 4 heat melted posts on the Bottom chassis ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0011-3) on the bottom chassis ass'y melt the 4 posts with a soldering iron.


Heat melted posts
Foot
Bottom chassis ass'y
Soldering iron
Foot (RKA0011-3)

## POWER SOURCE ON/OFF OF THIS UNIT

**1. Connect this unit to an AC outlet by the AC power cord.**
**(This unit comes to stand-by mode.)**
**2. Short the test point TP701 in Fig. 1.**
**This unit comes to power ON mode.**

### Operation check

1. Set this unit to power ON mode.
2. Input a signal (1kHz, 100mV), and confirm it to be outputted from the speaker terminal.

| | INPUT | OUTPUT |
|---|---|---|
| Lch | J603–J308 | Lch speaker terminal |
| Rch | J604–J308 | Rch speaker terminal |
| Surround | J611–J308 | Surround speaker terminal (To output a signal, both Lch and Rch should be connected.) |
| Center | J612–J308 | Center speaker terminal |

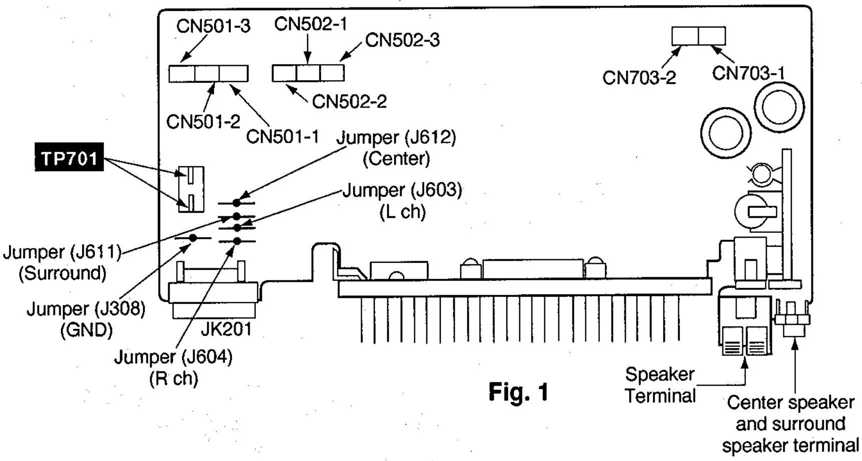

CN501-3
CN502-1
CN502-3
CN703-2
CN703-1
CN502-2
CN501-2
CN501-1
Jumper (J612) (Center)
TP701
Jumper (J603) (L ch)
Jumper (J611) (Surround)
Jumper (J308) (GND)
JK201
Jumper (J604) (R ch)
Speaker Terminal
Center speaker and surround speaker terminal

Fig. 1

## MEASUREMENTS AND ADJUSTMENTS

**Caution:** Before adjustment, be sure to connect this unit through the tuner (ST-CA10).

**Control positions and equipment used.**

- BASS, TREBLE knob .................. Center
- Input selector (ST-CA10) ............. AUX
- AF Oscillator
- AC electronic voltmeter (EVM)

**• POWER METER ADJUSTMENT**

1. Connect an AF oscillator and AC EVM to the amplifier, as shown in **Fig. 1**.
2. Set the power meter input level to 0 and confirm the meters on both amplifiers, L ch and R ch, show **–60dB**.
3. Turn on power to the unit and apply a **1kHz 50mV** signal from pin ③ (GND) to pin ④ (R ch) and pin ⑤ (L ch) of W501.
   With this input level applied, check the AC EVM monitor are within the range of **±3mV**.
4. Adjust **VR808** (R ch) and **VR809** (L ch) so that the power meter indicates **1W**, as shown in **Fig.2**.
5. Increase the input level by **10dB** and confirm that the power meter indicates **10W (±1.5W)**.
6. Set the input level back to **0** and check the meter indicators do not return to **–60dB** too quickly or unevenly.

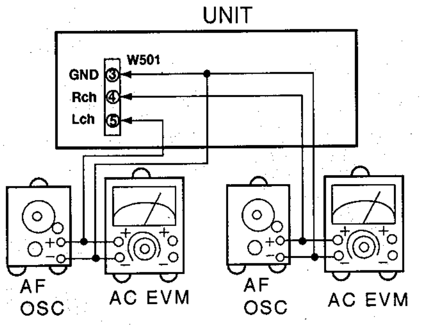

UNIT
W501
GND ③
Rch ④
Lch ⑤
AF OSC
AC EVM
AF OSC
AC EVM

Fig.1

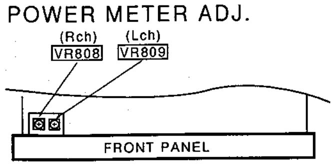

POWER METER ADJ.
(Rch)
(Lch)
VR808
VR809
FRONT PANEL

Fig.2

# SCHEMATIC DIAGRAM

- **This schematic diagram may be modified at any time with the development of new technology.**

**Page**

**A OPERATION CIRCUIT** ........ 18, 19

**B HEADPHONES JACK** ........ 18

**C MAIN CIRCUIT** ........ 20, 21

**D POWER TRANSFORMER CIRCUIT [For (E, EB, EG, GN) areas]** ........ 21

**[For (GC) area]** ........ 17

**E AC IN TERMINAL CIRCUIT [For (E, EB, EG, GN) areas]** ........ 17

**F VOLTAGE SELECTOR CIRCUIT [For (GC) area]** ........ 17

**Notes:**

- **S701**: Voltage adj. switch in "220V" position. (110V ↔ 127V ↔ 220V ↔ 240V) [For (GC) area only]
- **S801**: Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)
- **S802**: DOLBY PRO LOGIC mode select switch (MODE)
- **S803**: Test signal switch (TEST)
- **S804**: Delay time adjust switch (DELAY TIME)
- **S805**: Center mode select switch (CENTER MODE)
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
  No mark: Power ON
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

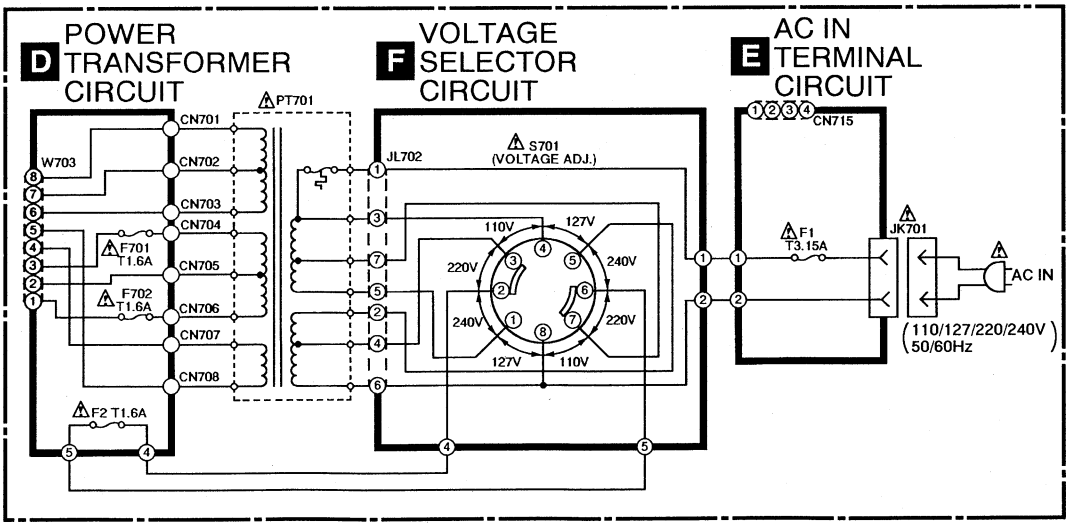
- **Caution!**

  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

- **Voltage and signal line**

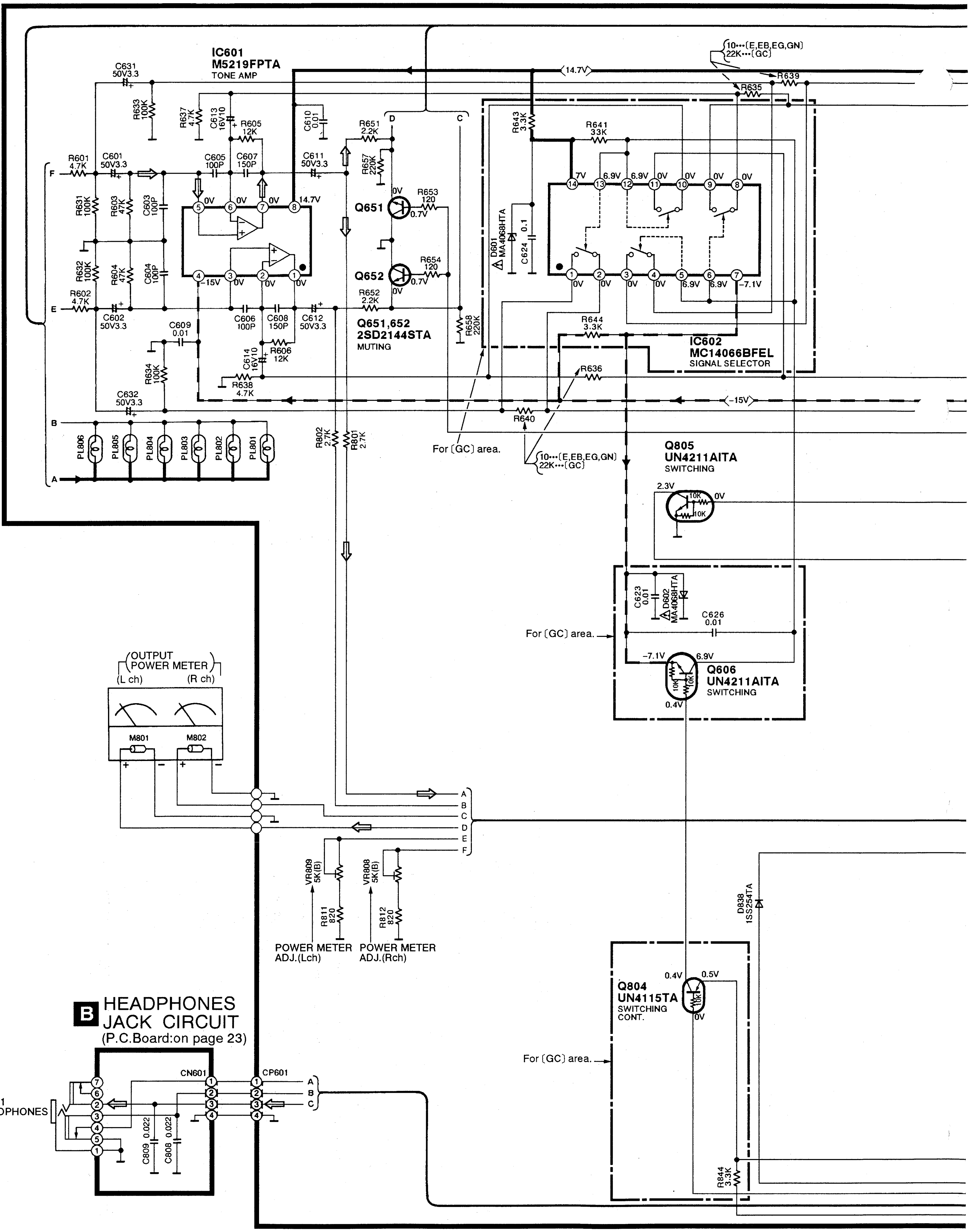
| | | | |
|---|---|---|---|
| ━━▶━━ | : Positive voltage line | ▪▪▪▪▶▪▪▪▪ | : Negative voltage line |
| ➡ | : Source signal line (L-ch) | | |
| ▫▫▫▫⇨ | : Surround speaker drive signal line | | |
| ⇨ | : Center speaker drive signal line | | |

Power Source For 〔GC〕 area. (P.C.Board:on page 24)



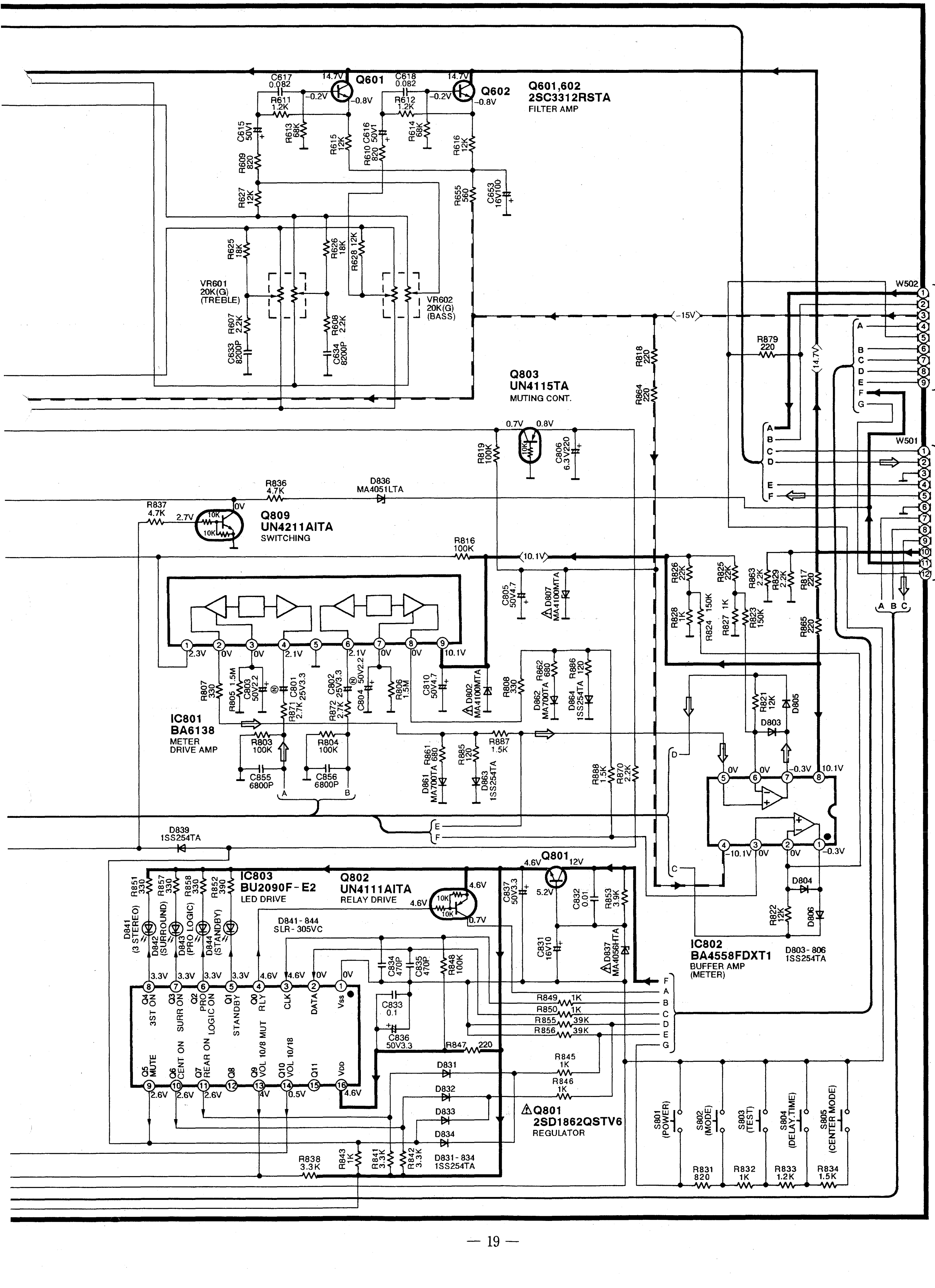
D POWER TRANSFORMER CIRCUIT
F VOLTAGE SELECTOR CIRCUIT
E AC IN TERMINAL CIRCUIT
⚠PT701
W703
CN701
CN702
CN703
CN704
CN705
CN706
CN707
CN708
⚠F701 T1.6A
⚠F702 T1.6A
⚠F2 T1.6A
JL702
⚠ S701 (VOLTAGE ADJ.)
110V
127V
220V
240V
CN715
⚠F1 T3.15A
⚠ JK701
⚠ AC IN
(110/127/220/240V 50/60Hz)

## A OPERATION CIRCUIT (P.C.Board:on page 23)

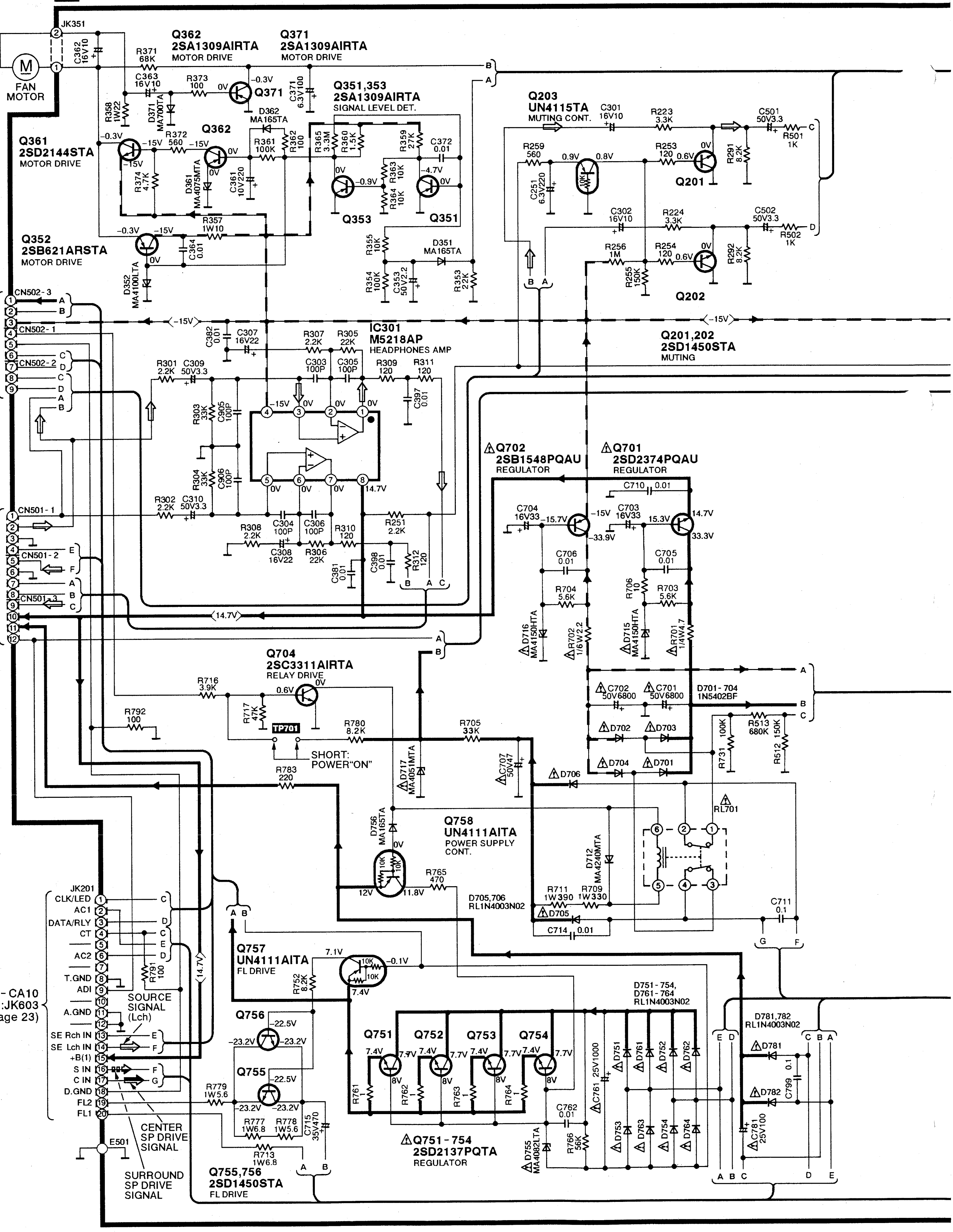

IC601
M5219FPTA
TONE AMP
C631 50V3.3
R633 100K
R637 4.7K
C613 16V10
R605 12K
C610 0.01
R651 2.2K
R657 220K
R653 120
R654 120
R652 2.2K
Q651
Q652
Q651,652
2SD2144STA
MUTING
R658 220K
R601 4.7K
C601 50V3.3
C605 100P
C607 150P
C611 50V3.3
R631 100K
R603 47K
C603 100P
R632 100K
R604 47K
C604 100P
R602 4.7K
C602 50V3.3
C606 100P
C608 150P
C612 50V3.3
C609 0.01
C614 16V10
R606 12K
R634 100K
R638 4.7K
C632 50V3.3
14.7V
-15V
0.7V
0V
PL806
PL805
PL804
PL803
PL802
PL801
R802 2.7K
R801 2.7K
10…(E,EB,EG,GN)
22K…(GC)
R635
R639
R643 3.3K
R641 33K
D601 MA4068HTA
C624 0.1
7V
6.9V
-7.1V
R644 3.3K
R636
R640
IC602
MC14066BFEL
SIGNAL SELECTOR
For (GC) area.
Q805
UN4211AITA
SWITCHING
2.3V
10K
C623 0.01
D602 MA4068HTA
C626 0.01
Q606
UN4211AITA
SWITCHING
0.4V
OUTPUT POWER METER
(L ch)
(R ch)
M801
M802
A
B
C
D
E
F
VR809 5K(B)
VR808 5K(B)
R811 820
R812 820
POWER METER ADJ.(Lch)
POWER METER ADJ.(Rch)
D838 1SS254TA
Q804
UN4115TA
SWITCHING CONT.
0.5V
R844 3.3K
CN601
CP601
JK301 HEADPHONES
C809 0.022
C808 0.022

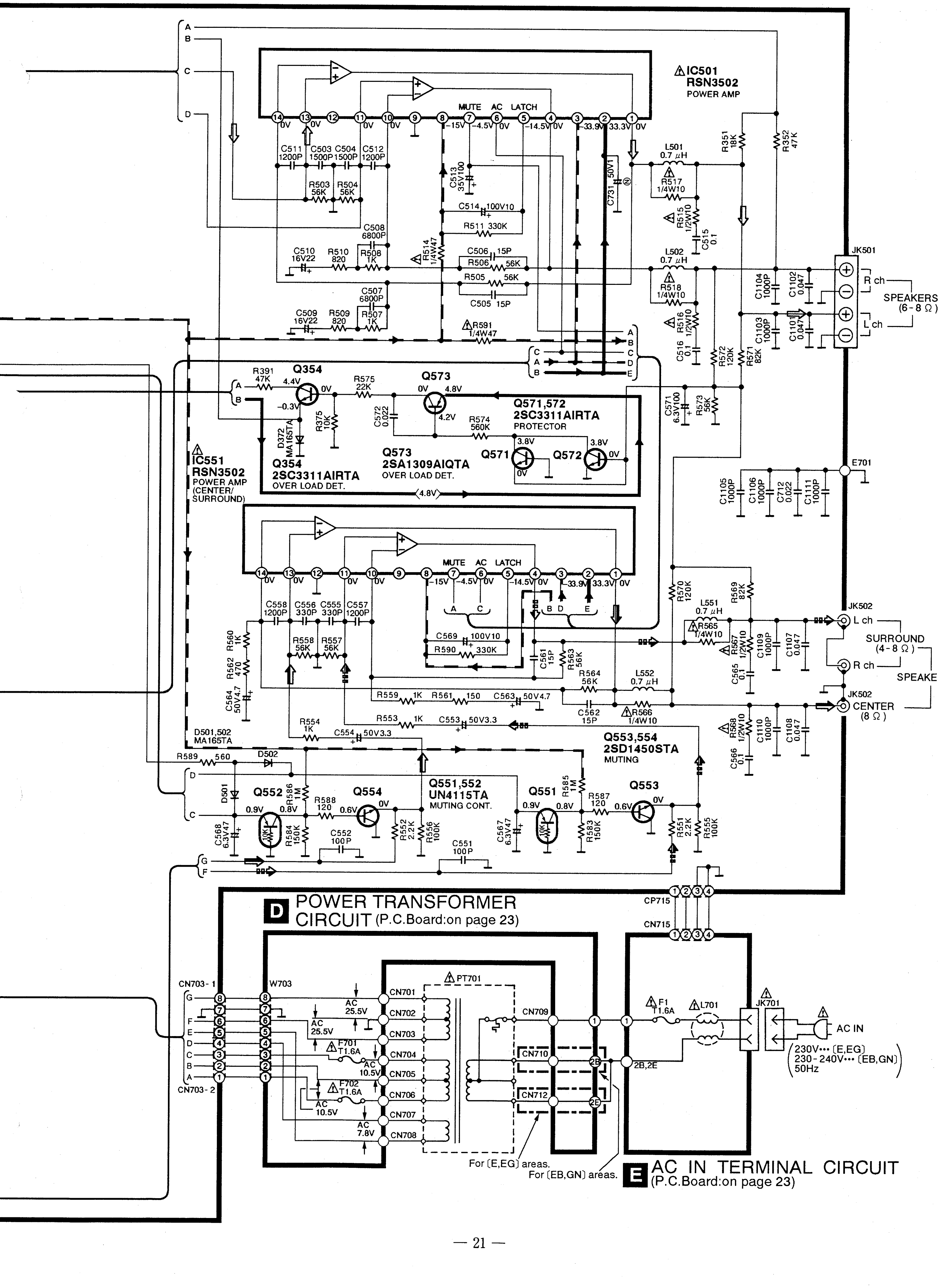
## B HEADPHONES JACK CIRCUIT

(P.C.Board:on page 23)


Q601,602
2SC3312RSTA
FILTER AMP
Q601
Q602
C617 0.082
C618 0.082
R611 1.2K
R612 1.2K
R613 68K
R614 68K
R615 12K
R616 12K
C615 50V1
C616 50V1
R609 820
R610 820
R627 12K
R655 560
C653 16V100
R625 18K
R626 18K
R628 12K
VR601 20K(G) (TREBLE)
VR602 20K(G) (BASS)
R607 2.2K
R608 2.2K
C633 8200P
C634 8200P
14.7V
-0.2V
-0.8V
-15V
14.7V
Q803
UN4115TA
MUTING CONT.
R818 220
R864 220
R879 220
R819 100K
C806 6.3V220
0.7V
0.8V
R836 4.7K
D836 MA4051LTA
R837 4.7K
Q809
UN4211AITA
SWITCHING
2.7V
0V
10K
R816 100K
10.1V
C805 50V4.7
D807 MA4100MTA
IC801
BA6138
METER DRIVE AMP
2.3V
2.1V
10.1V
R807 330
R805 1.5M
C803 50V2.2
C801 25V3.3
C802 25V3.3
C804 50V2.2
R806 1.5M
C810 50V4.7
D802 MA4100MTA
R808 330
R871 2.7K
R872 2.7K
R803 100K
R804 100K
C855 6800P
C856 6800P
D861 MA700TA
R861 680
R865 120
D863 1SS254TA
R887 1.5K
R862 680
D862 MA700TA
R886 120
D864 1SS254TA
R888 1.5K
R870 2.2K
D839 1SS254TA
W502
W501
R826 22K
R825 22K
R863 2.2K
R829 2.2K
R817 220
R828 1K
R824 150K
R827 1K
R823 150K
R865 220
R821 12K
D805
D803
-0.3V
IC802
BA4558FDXT1
BUFFER AMP (METER)
-10.1V
D804
R822 12K
D806
D803 - 806 1SS254TA
Q801
4.6V
12V
5.2V
C837 50V3.3
C832 0.01
R853 3.9K
C831 16V10
D837 MA4056HTA
IC803
BU2090F - E2
LED DRIVE
Q802
UN4111AITA
RELAY DRIVE
0.7V
R851 330
R857 330
R858 330
R852 390
D841 (3 STEREO)
D842 (SURROUND)
D843 (PRO LOGIC)
D844 (STANDBY)
D841 - 844 SLR - 305VC
3.3V
Q4 3ST ON
Q3 SURR ON
Q2 PRO LOGIC ON
Q1 STANDBY
Q0 RLY
CLK
DATA
Vss
Q5 MUTE
Q6 CENT ON
Q7 REAR ON
Q8
Q9 VOL 10/8 MUT
Q10 VOL 10/18
Q11
VDD
2.6V
4V
0.5V
C834 470P
C835 470P
R848 100K
C833 0.1
C836 50V3.3
R847 220
R849 1K
R850 1K
R855 39K
R856 39K
R845 1K
R846 1K
D831
D832
D833
D834
Q801
2SD1862QSTV6
REGULATOR
R838 3.3K
R843 1K
R841 3.3K
R842 3.3K
D831 - 834 1SS254TA
S801 (POWER)
S802 (MODE)
S803 (TEST)
S804 (DELAY TIME)
S805 (CENTER MODE)
R831 820
R832 1K
R833 1.2K
R834 1.5K

## C MAIN CIRCUIT (P.C.Board:on page 22)

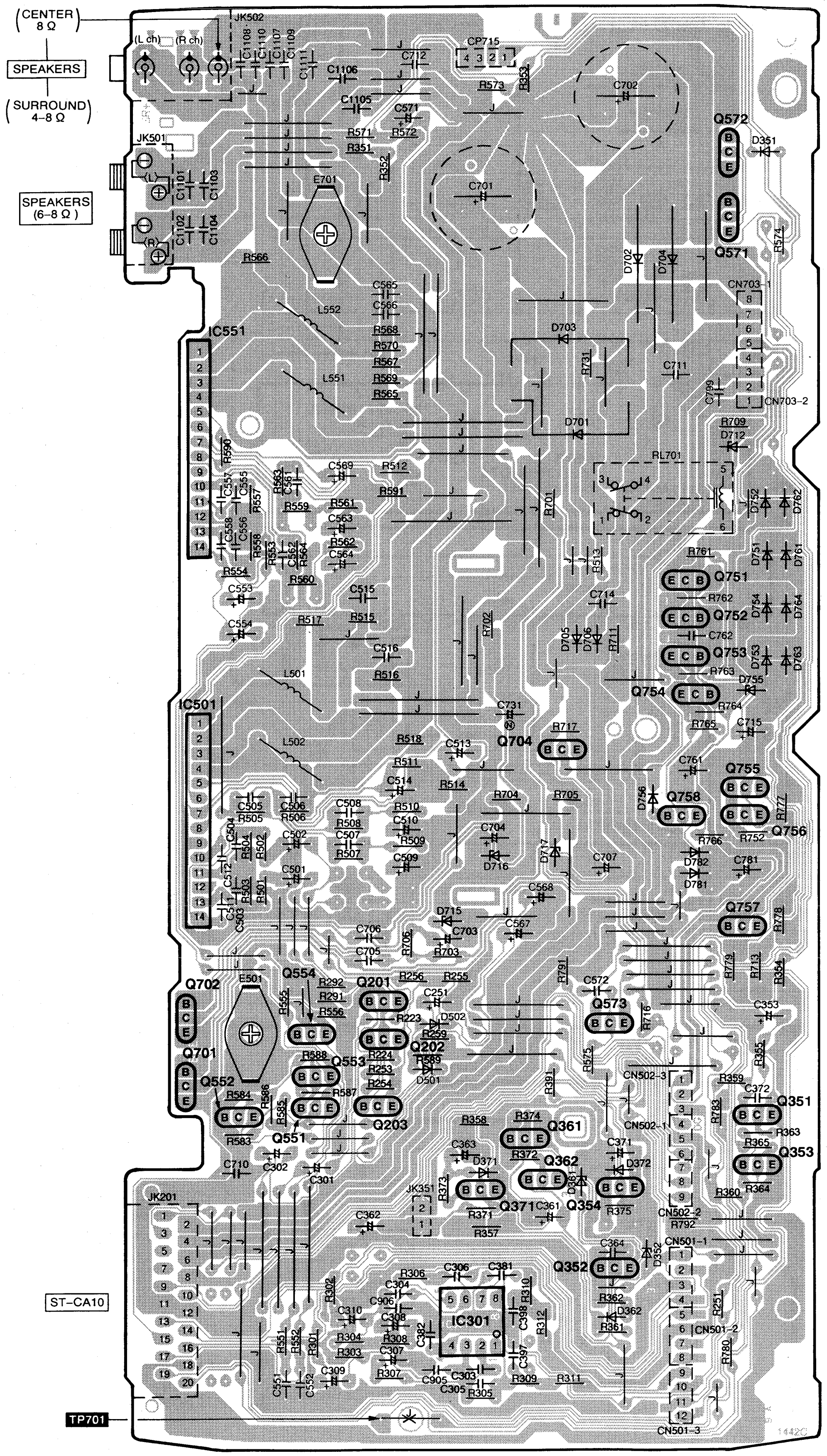

JK351
FAN MOTOR
M
C362 16V10
R371 68K
C363 16V10
R358 1W22
D371 MA700TA
R373 100
Q362 2SA1309AIRTA MOTOR DRIVE
Q371 2SA1309AIRTA MOTOR DRIVE
Q371
C371 6.3V100
-0.3V
0V
Q351,353 2SA1309AIRTA SIGNAL LEVEL DET.
D362 MA165TA
Q361 2SD2144STA MOTOR DRIVE
R372 560
Q362
-15V
R361 100K
R362 100
R365 3.3M
R360 1.5K
R359 27K
C372 0.01
R374 4.7K
D361 MA4075MTA
C361 10V220
R363 10K
R364 10K
-0.9V
-4.7V
Q353
Q351
R357 1W10
Q352 2SB621ARSTA MOTOR DRIVE
C364 0.01
D352 MA4100LTA
R355 10K
D351 MA165TA
R354 100K
C353 50V2.2
R353 22K
Q203 UN4115TA MUTING CONT.
C301 16V10
R223 3.3K
C501 50V3.3
R501 1K
R259 560
0.9V
0.8V
R253 120
0.6V
Q201
R291 8.2K
C251 6.3V220
C302 16V10
R224 3.3K
C502 50V3.3
R502 1K
R256 1M
R254 120
R255 150K
Q202
R292 8.2K
CN502-3
CN502-1
CN502-2
(-15V)
C382 0.01
C307 16V22
R307 2.2K
R305 22K
IC301 M5218AP HEADPHONES AMP
Q201,202 2SD1450STA MUTING
R301 2.2K
C309 50V3.3
C303 100P
C305 100P
R309 120
R311 120
C397 0.01
R303 33K
C905 100P
R304 33K
C906 100P
14.7V
CN501-1
CN501-2
CN501-3
R302 2.2K
C310 50V3.3
R308 2.2K
C304 100P
C306 100P
R310 120
R251 2.2K
C308 16V22
R306 22K
C381 0.01
C398 0.01
R312 120
(14.7V)
⚠Q702 2SB1548PQAU REGULATOR
⚠Q701 2SD2374PQAU REGULATOR
C710 0.01
C704 16V33
-15.7V
C703 16V33
15.3V
-33.9V
33.3V
C706 0.01
C705 0.01
R704 5.6K
R706 10
R703 5.6K
⚠D716 MA4150HTA
⚠R702 1/6W2.2
⚠D715 MA4150HTA
⚠R701 1/4W4.7
Q704 2SC3311AIRTA RELAY DRIVE
R716 3.9K
R717 47K
0.6V
TP701
R792 100
R780 8.2K
R705 33K
SHORT: POWER"ON"
R783 220
⚠D717 MA4051MTA
⚠C707 50V47
⚠C702 50V6800
⚠C701 50V6800
D701-704 1N5402BF
R513 680K
R731 100K
R512 150K
⚠D702
⚠D703
⚠D704
⚠D701
⚠D706
⚠RL701
D756 MA165TA
Q758 UN4111AITA POWER SUPPLY CONT.
D712 MA4240MTA
R765 470
12V
11.8V
D705,706 RL1N4003N02
R711 1W390
R709 1W330
⚠D705
C714 0.01
C711 0.1
JK201
CLK/LED
AC1
DATA/RLY
CT
AC2
T.GND
ADI
A.GND
SE Rch IN
SE Lch IN
+B(1)
S IN
C IN
D.GND
FL2
FL1
To ST-CA10 :JK603 (on page 23)
R791 100
SOURCE SIGNAL (Lch)
Q757 UN4111AITA FL DRIVE
7.1V
-0.1V
R752 8.2K
7.4V
Q756
-22.5V
-23.2V
Q755
R779 1W5.6
R777 1W6.8
R778 1W5.6
C715 35V470
R713 1W6.8
CENTER SP DRIVE SIGNAL
SURROUND SP DRIVE SIGNAL
E501
Q755,756 2SD1450STA FL DRIVE
Q751
Q752
Q753
Q754
7.7V
8V
R761 1
R762 1
R763 1
R764 1
⚠Q751-754 2SD2137PQTA REGULATOR
D751-754, D761-764 RL1N4003N02
⚠C761 25V1000
⚠D751
⚠D761
⚠D752
⚠D762
⚠D753
⚠D763
⚠D754
⚠D764
C762 0.01
R766 56K
⚠D755 MA4082LTA
D781,782 RL1N4003N02
⚠D781
⚠D782
C799 0.1
⚠C781 25V100


IC501
RSN3502
POWER AMP
MUTE
AC
LATCH
-15V
-4.5V
0V
-14.5V
-33.9V
33.3V
C511 1200P
C503 1500P
C504 1500P
C512 1200P
R503 56K
R504 56K
C513 35V100
C514 100V10
R511 330K
C731 50V1
L501 0.7 μH
R517 1/4W10
R515 1/2W10
C515 0.1
R351 18K
R352 47K
C508 6800P
C510 16V22
R510 820
R508 1K
R514 1/4W47
C506 15P
R506 56K
R505 56K
C505 15P
L502 0.7 μH
R518 1/4W10
R516 1/2W10
C516 0.1
C507 6800P
C509 16V22
R509 820
R507 1K
R591 1/4W47
C1104 1000P
C1102 0.047
C1103 1000P
C1101 0.047
JK501
R ch
L ch
SPEAKERS (6-8 Ω)
R572 120K
R571 82K
C571 6.3V100
R573 56K
R391 47K
Q354
4.4V
-0.3V
D372 MA165TA
R375 10K
R575 22K
Q573
4.8V
4.2V
C572 0.022
R574 560K
Q571,572
2SC3311AIRTA
PROTECTOR
Q571
Q572
3.8V
Q354
2SC3311AIRTA
OVER LOAD DET.
Q573
2SA1309AIQTA
OVER LOAD DET.
IC551
RSN3502
POWER AMP (CENTER/ SURROUND)
E701
C1105 1000P
C1106 1000P
C712 0.022
C1111 1000P
C558 1200P
C556 330P
C555 330P
C557 1200P
R560 1K
R562 470
C564 50V4.7
R558 56K
R557 56K
C569 100V10
R590 330K
C561 15P
R563 56K
R570 120K
R569 82K
L551 0.7 μH
R565 1/4W10
R567 1/2W10
C565 0.1
C1109 1000P
C1107 0.047
JK502
L ch
R ch
SURROUND (4-8 Ω)
SPEAKERS
CENTER (8 Ω)
R564 56K
L552 0.7 μH
R559 1K
R561 150
C563 50V4.7
C562 15P
R566 1/4W10
R568 1/2W10
C566 0.1
C1110 1000P
C1108 0.047
R554 1K
C554 50V3.3
R553 1K
C553 50V3.3
D501,502 MA165TA
Q553,554
2SD1450STA
MUTING
R589 560
D502
D501
Q552
R586 1M
R588 120
Q554
0.9V
0.8V
0.6V
C568 6.3V47
R584 150K
C552 100P
R552 2.2K
R556 100K
Q551,552
UN4115TA
MUTING CONT.
Q551
R585 1M
R587 120
Q553
C567 6.3V47
R583 150K
C551 100P
R551 2.2K
R555 100K
CP715
CN715
D
POWER TRANSFORMER CIRCUIT (P.C.Board:on page 23)
CN703-1
CN703-2
W703
PT701
CN701
CN702
CN703
CN704
CN705
CN706
CN707
CN708
AC 25.5V
AC 25.5V
F701 T1.6A
AC 10.5V
F702 T1.6A
AC 10.5V
AC 7.8V
CN709
CN710
CN712
2B,2E
F1 T1.6A
L701
JK701
AC IN
230V… [E,EG]
230-240V… [EB,GN]
50Hz
For [E,EG] areas.
For [EB,GN] areas.
E
AC IN TERMINAL CIRCUIT (P.C.Board:on page 23)

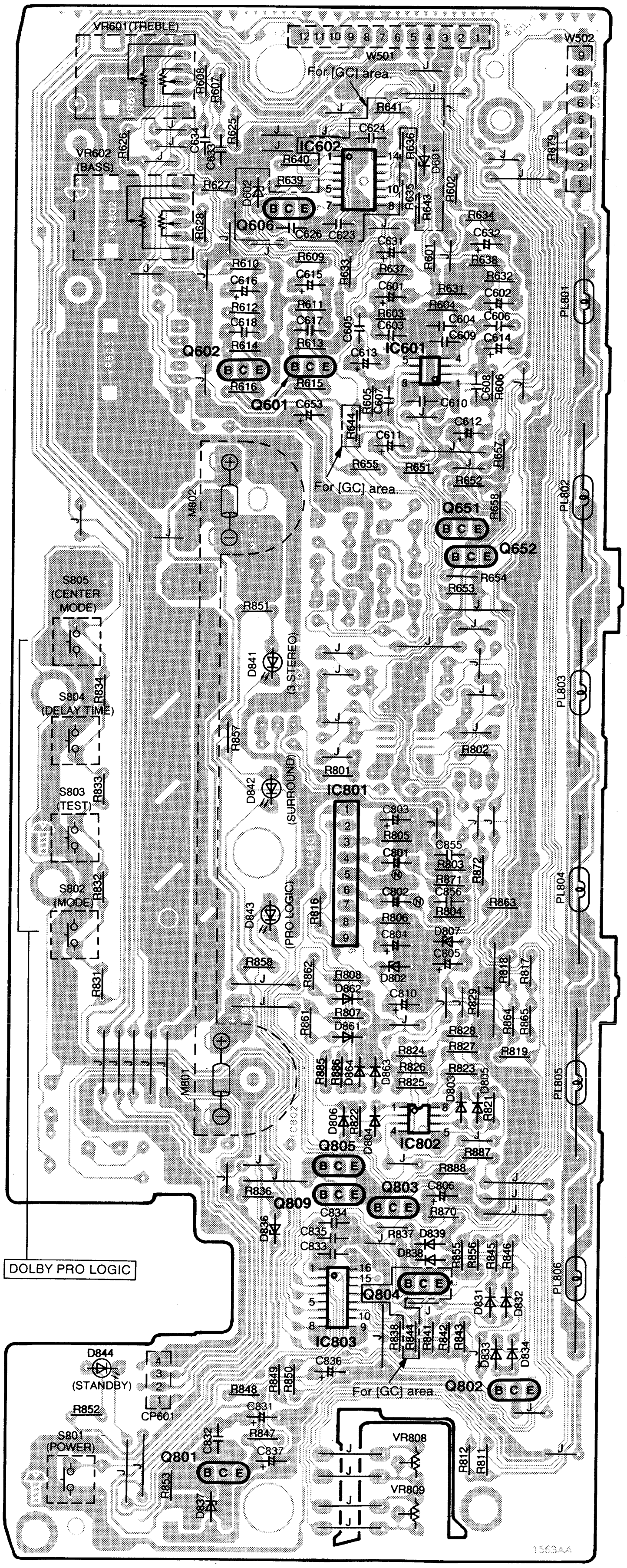
# ■PRINTED CIRCUIT BOARD DIAGRAM

- This printed circuit board diagram may be modified at any time with the development of new technology.

**C MAIN P.C.B. (REP2224C–M)**

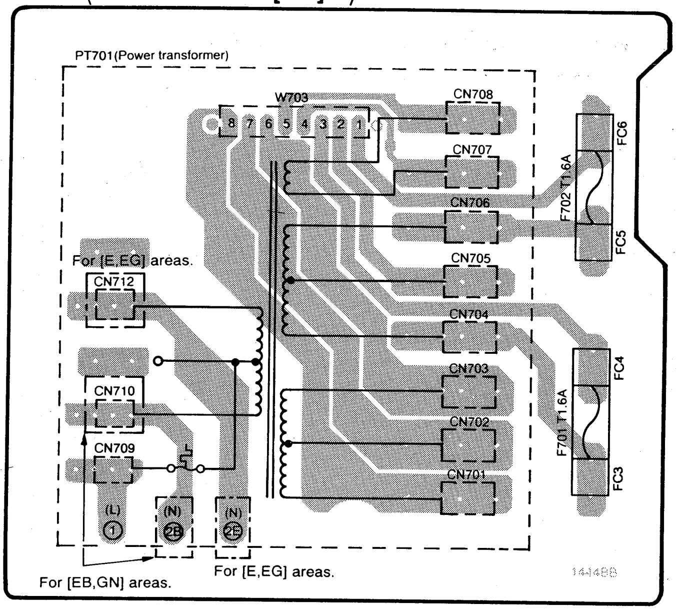

CENTER 8 Ω
SPEAKERS
SURROUND 4–8 Ω
JK502
(L ch)
(R ch)
JK501
SPEAKERS (6–8 Ω)
CP715
E701
C701
C702
Q572
Q571
D351
D702
D704
D703
D701
CN703-1
CN703-2
IC551
L552
L551
RL701
Q751
Q752
Q753
Q754
Q755
Q756
Q757
Q758
Q704
IC501
L501
L502
Q702
Q701
E501
Q554
Q552
Q553
Q551
Q201
Q202
Q203
Q573
Q361
Q362
Q371
Q354
Q351
Q353
Q352
CN502-3
CN502-1
CN502-2
CN501-1
CN501-2
CN501-3
JK351
JK201
IC301
ST–CA10
TP701

## A OPERATION P.C.B. (REP2223B–S•••[E,EG,EB,GN] / REP2223C–S•••[GC])


VR601(TREBLE)
W501
For [GC] area.
W502
VR602 (BASS)
IC602
Q606
Q602
Q601
IC601
For [GC] area.
M802
Q651
Q652
S805 (CENTER MODE)
S804 (DELAY TIME)
S803 (TEST)
S802 (MODE)
D841 (3 STEREO)
D842 (SURROUND)
D843 (PRO LOGIC)
IC801
PL801
PL802
PL803
PL804
PL805
PL806
M801
IC802
Q805
Q809
Q803
Q804
IC803
DOLBY PRO LOGIC
D844 (STANDBY)
CP601
S801 (POWER)
Q801
Q802
For [GC] area.
VR808
VR809
1563AA

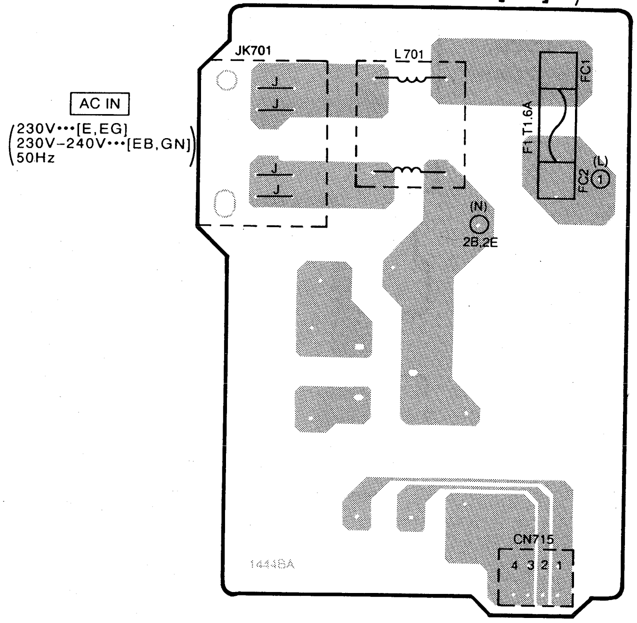
## D POWER TRANSFORMER P.C.B.

REP2298A–P•••[E,EG]
REP2298B–P•••[EB]
REP2298E–P•••[GN]


PT701(Power transformer)
W703
CN708
CN707
CN706
CN705
CN704
CN703
CN702
CN701
FC6
FC5
FC4
FC3
F702 T1.6A
F701 T1.6A
For [E,EG] areas.
CN712
CN710
CN709
(L) 1
(N) 2B
(N) 2E
For [E,EG] areas.
For [EB,GN] areas.
1444BB

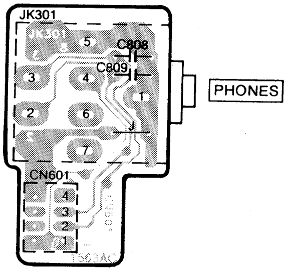
## E AC IN TERMINAL P.C.B.

REP2298A–P•••[E,EG]
REP2298B–P•••[EB]
REP2298E–P•••[GN]

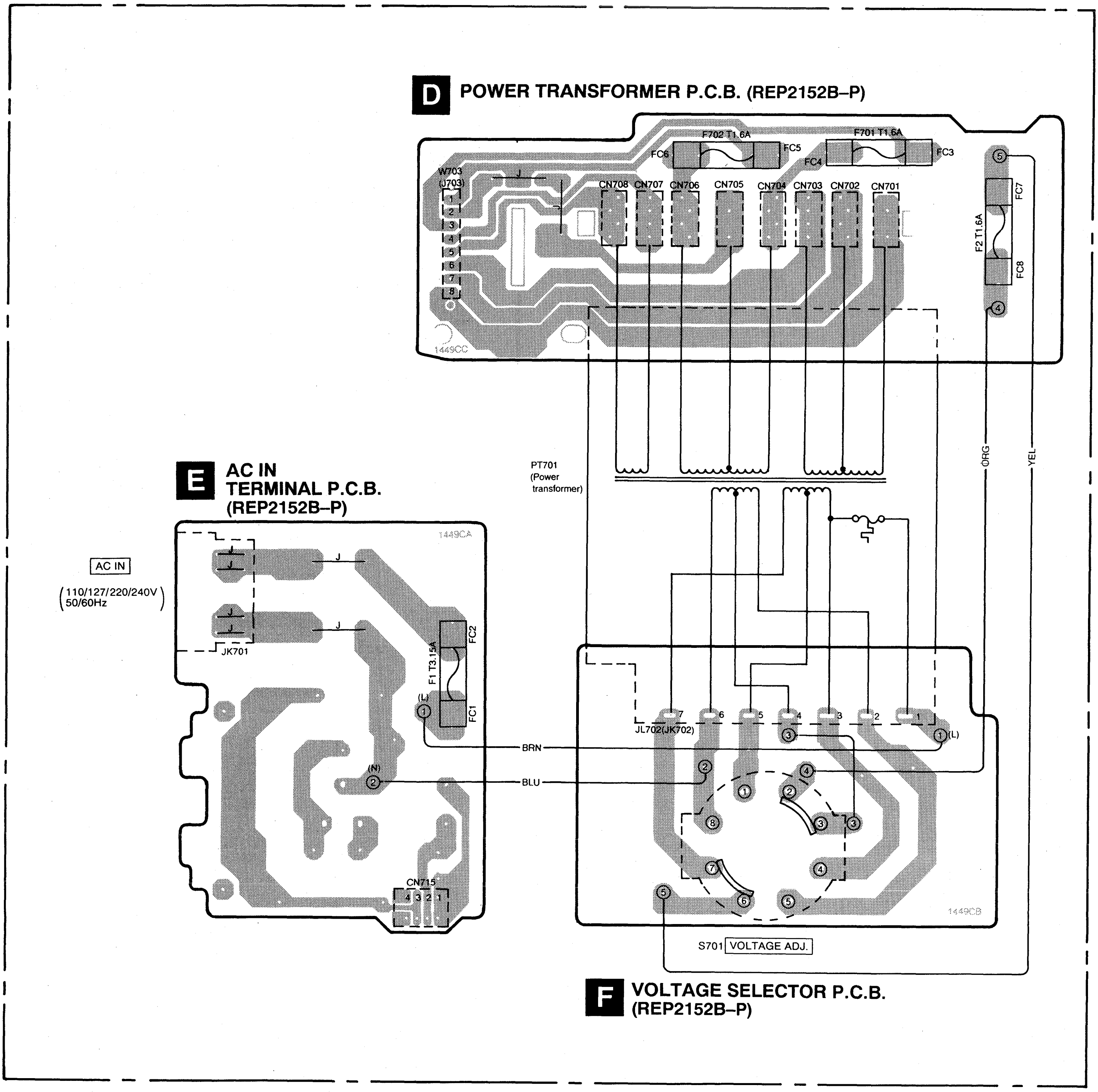

JK701
L701
FC1
F1 T1.6A
FC2 (L) 1
(N) 2B,2E
AC IN
230V•••[E,EG]
230V–240V•••[EB,GN]
50Hz
CN715
1444BA

## B HEADPHONES JACK P.C.B.

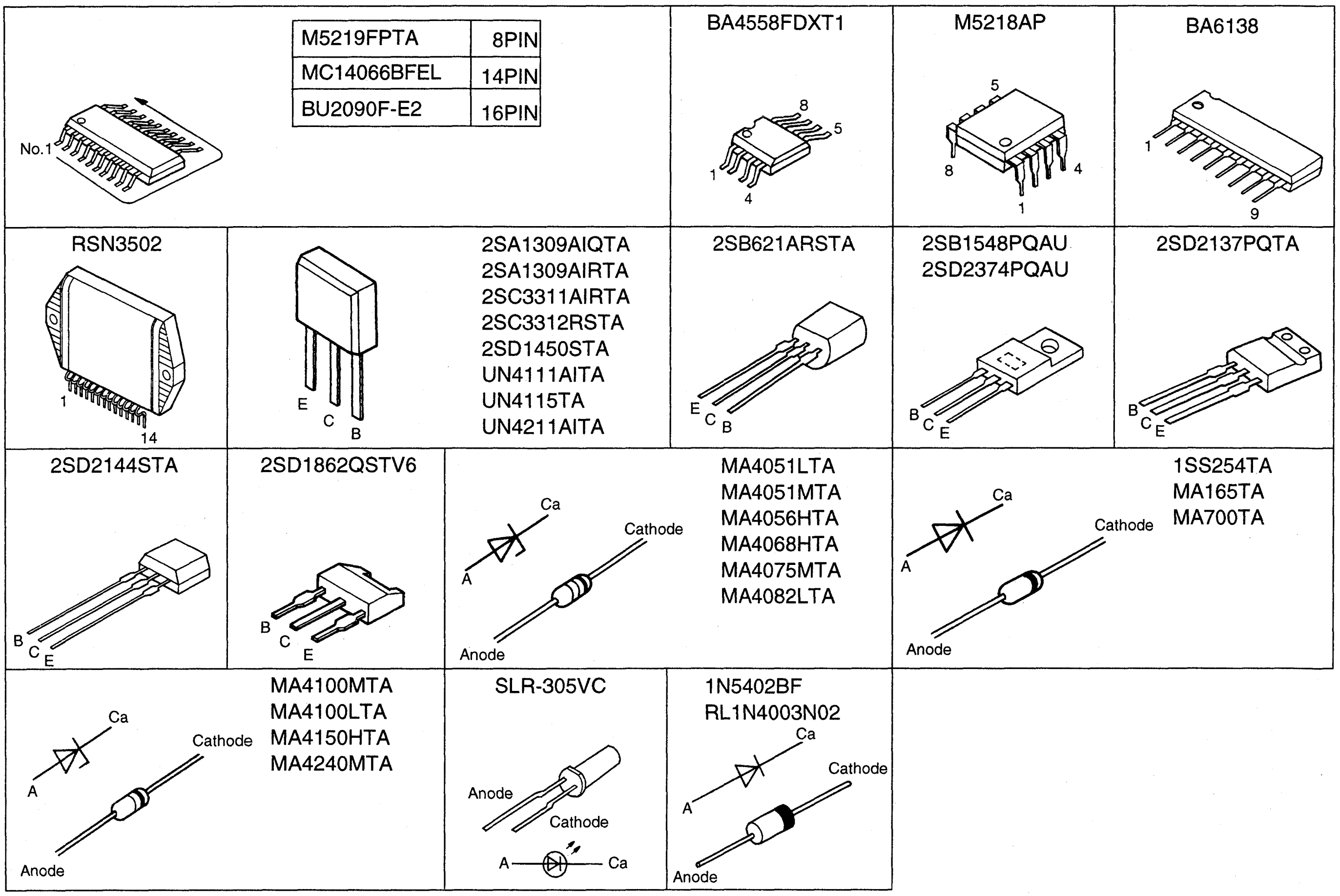
REP2223B–S•••[E,EG,EB,GN]
REP2223C–S•••[GC]


JK301
C808
C809
PHONES
CN601
1563AC

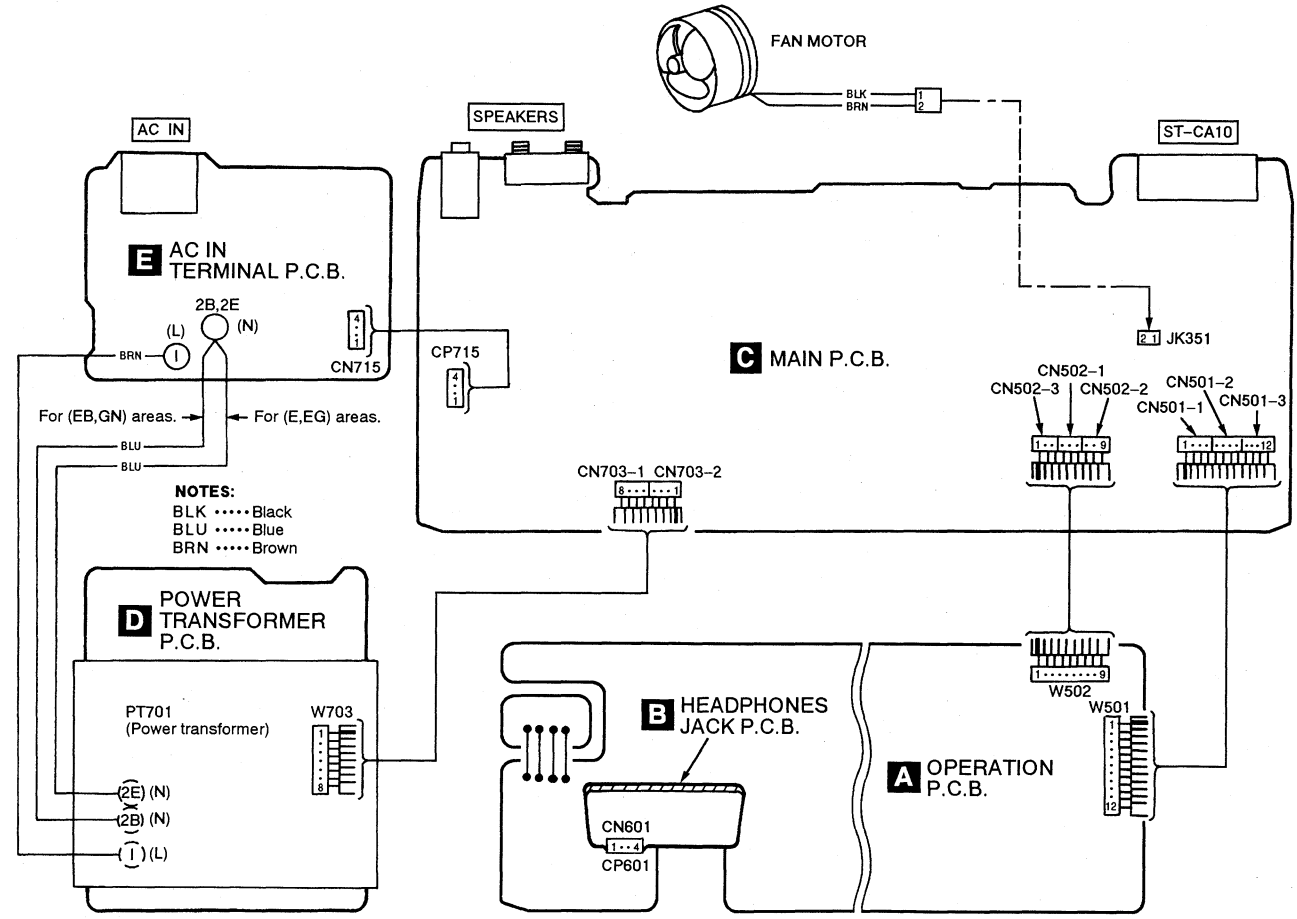
Power Source P.C.B. For [GC] area.


D POWER TRANSFORMER P.C.B. (REP2152B–P)
F702 T1.6A
F701 T1.6A
FC6
FC5
FC4
FC3
W703 (J703)
1
2
3
4
5
6
7
8
J
CN708
CN707
CN706
CN705
CN704
CN703
CN702
CN701
F2 T1.6A
FC7
FC8
⑤
④
1449CC
PT701 (Power transformer)
ORG
YEL
E AC IN TERMINAL P.C.B. (REP2152B–P)
1449CA
AC IN
110/127/220/240V 50/60Hz
JK701
J
F1 T3.15A
FC2
FC1
(L) ①
(N) ②
CN715
4 3 2 1
BRN
BLU
7 6 5 4 3 2 1
JL702(JK702)
①(L)
③
②
①
②
③
④
⑧
⑦
⑥
⑤
⑤
④
1449CB
S701 VOLTAGE ADJ.
F VOLTAGE SELECTOR P.C.B. (REP2152B–P)

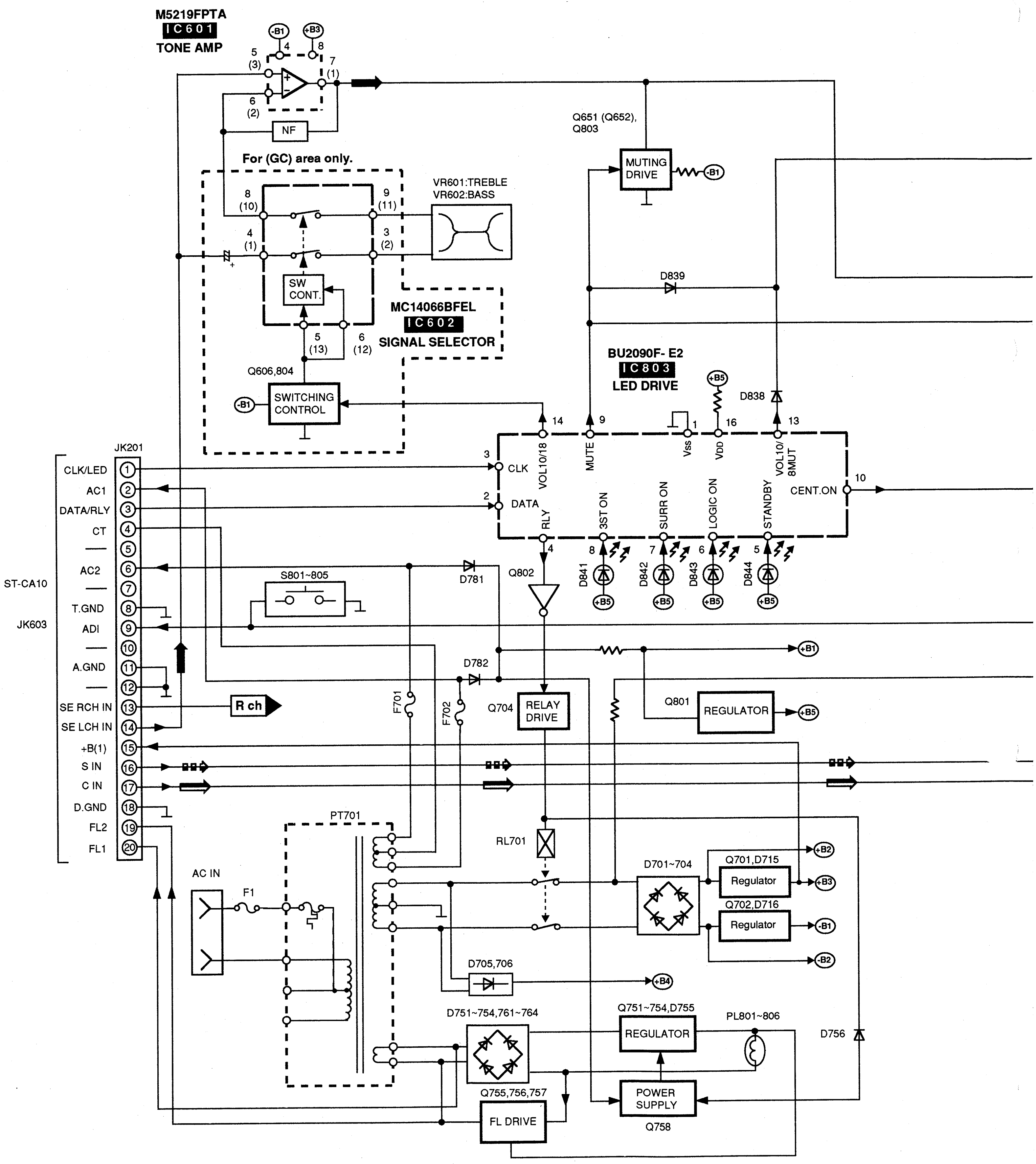
## • Terminal guide of IC's, transistors and diodes


M5219FPTA 8PIN
MC14066BFEL 14PIN
BU2090F-E2 16PIN
No.1
BA4558FDXT1
8
5
1
4
M5218AP
5
8
4
1
BA6138
1
9
RSN3502
1
14
2SA1309AIQTA
2SA1309AIRTA
2SC3311AIRTA
2SC3312RSTA
2SD1450STA
UN4111AITA
UN4115TA
UN4211AITA
E
C
B
2SB621ARSTA
E
C
B
2SB1548PQAU
2SD2374PQAU
B
C
E
2SD2137PQTA
B
C
E
2SD2144STA
B
C
E
2SD1862QSTV6
B
C
E
MA4051LTA
MA4051MTA
MA4056HTA
MA4068HTA
MA4075MTA
MA4082LTA
Ca
Cathode
A
Anode
1SS254TA
MA165TA
MA700TA
Ca
Cathode
A
Anode
MA4100MTA
MA4100LTA
MA4150HTA
MA4240MTA
Ca
Cathode
A
Anode
SLR-305VC
Anode
Cathode
A
Ca
1N5402BF
RL1N4003N02
Ca
Cathode
A
Anode

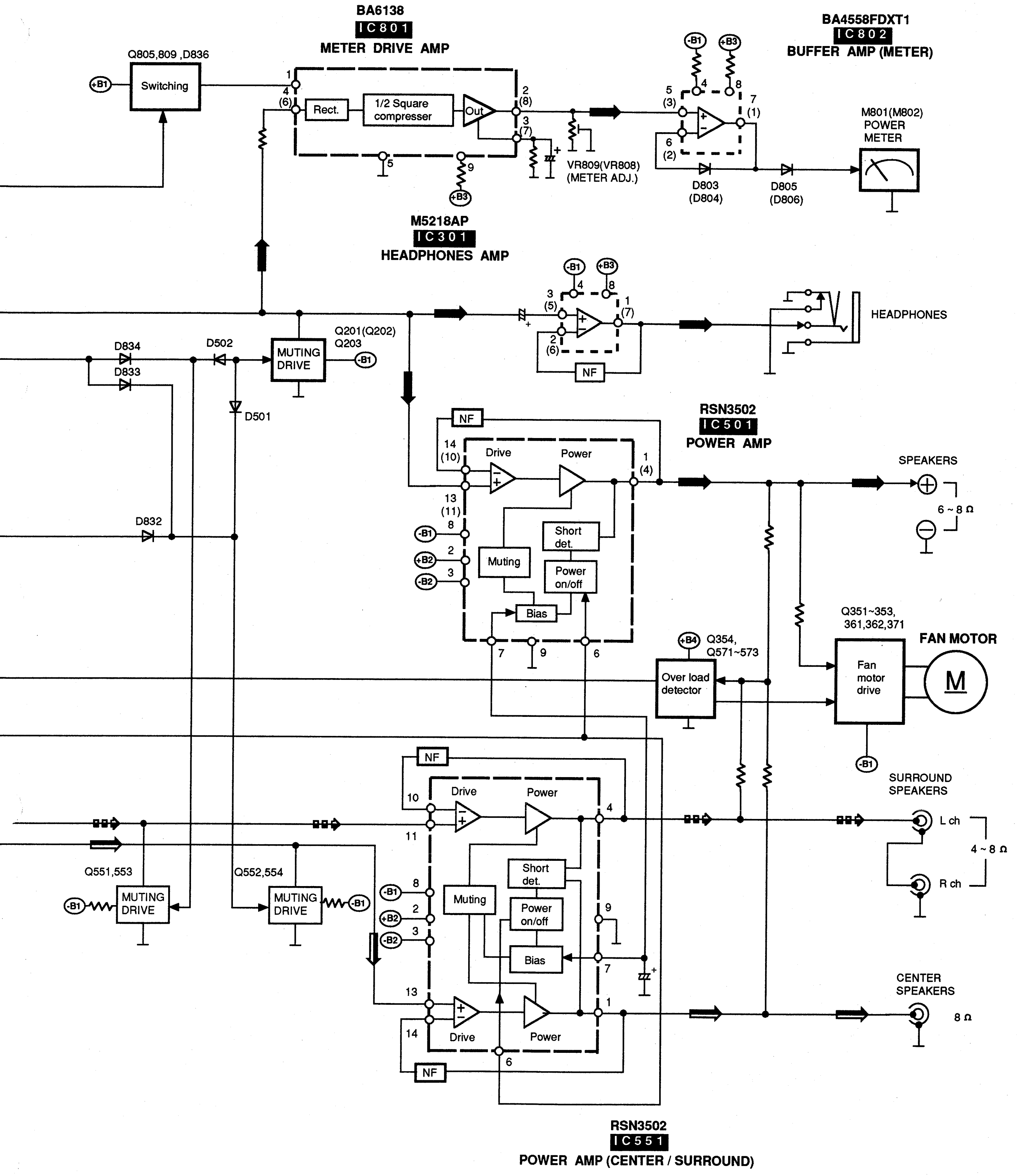
## WIRING CONNECTION DIAGRAM


FAN MOTOR
BLK
BRN
1
2
AC IN
SPEAKERS
ST-CA10
E AC IN TERMINAL P.C.B.
2B,2E
(L)
(N)
BRN
CN715
CP715
C MAIN P.C.B.
JK351
CN502-1
CN502-3
CN502-2
CN501-2
CN501-1
CN501-3
For (EB,GN) areas.
For (E,EG) areas.
BLU
BLU
NOTES:
BLK ····· Black
BLU ····· Blue
BRN ····· Brown
CN703-1 CN703-2
D POWER TRANSFORMER P.C.B.
PT701
(Power transformer)
W703
(2E) (N)
(2B) (N)
(1) (L)
B HEADPHONES JACK P.C.B.
CN601
CP601
W502
W501
A OPERATION P.C.B.

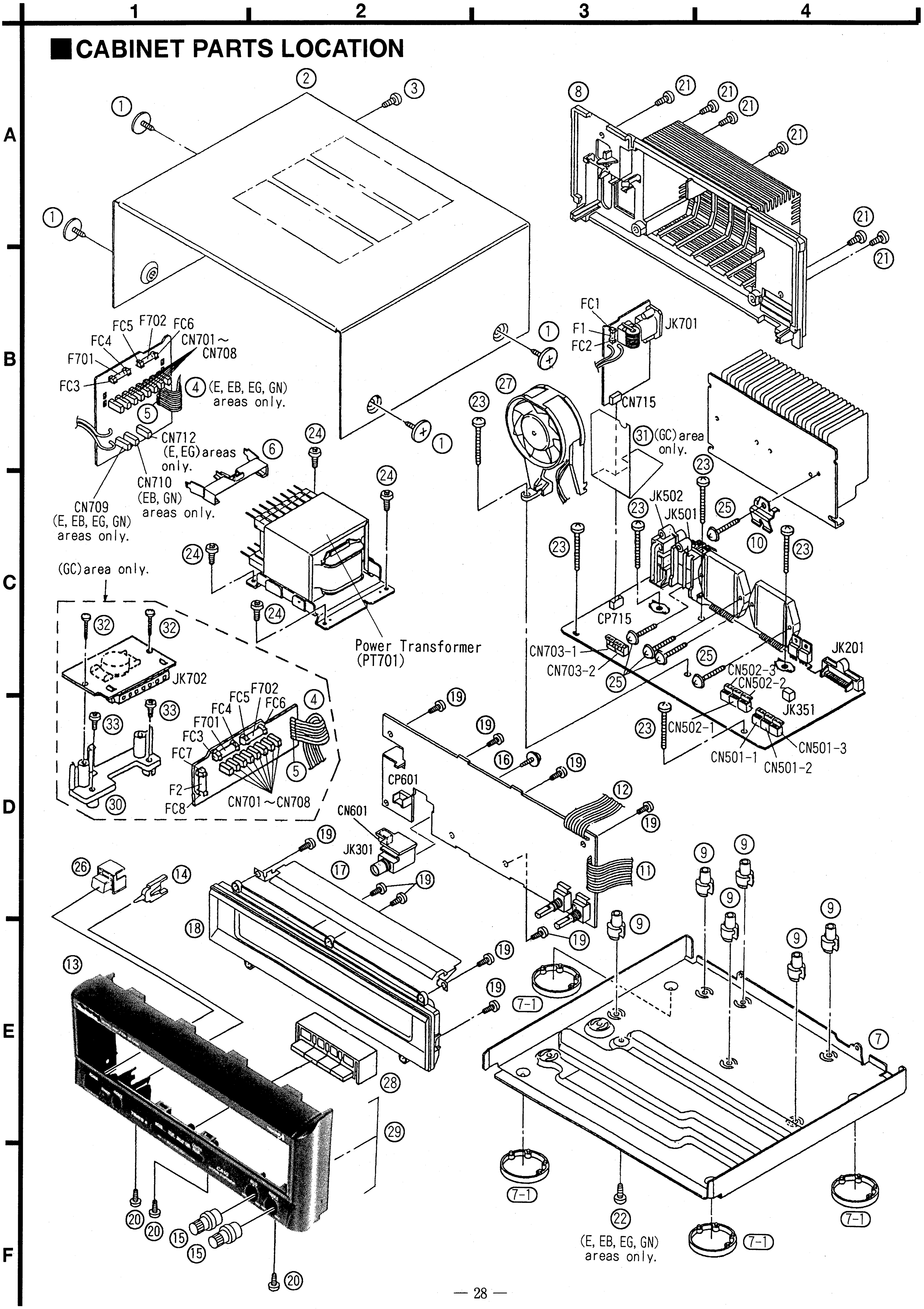
# ■BLOCK DIAGRAM


M5219FPTA
IC601
TONE AMP
-B1
+B3
5
(3)
4
8
7
(1)
6
(2)
NF
For (GC) area only.
8
(10)
9
(11)
4
(1)
3
(2)
SW
CONT.
5
(13)
6
(12)
VR601:TREBLE
VR602:BASS
MC14066BFEL
IC602
SIGNAL SELECTOR
Q606,804
SWITCHING
CONTROL
-B1
Q651 (Q652),
Q803
MUTING
DRIVE
-B1
D839
BU2090F- E2
IC803
LED DRIVE
+B5
D838
14
9
1
16
13
VOL10/18
MUTE
Vss
VDD
VOL10/
8MUT
3
CLK
2
DATA
10
CENT.ON
RLY
3ST ON
SURR ON
LOGIC ON
STANDBY
4
8
7
6
5
D841
D842
D843
D844
+B5
Q802
JK201
CLK/LED
AC1
DATA/RLY
CT
AC2
T.GND
ADI
A.GND
SE RCH IN
SE LCH IN
+B(1)
S IN
C IN
D.GND
FL2
FL1
ST-CA10
JK603
S801~805
D781
D782
+B1
R ch
F701
F702
Q704
RELAY
DRIVE
Q801
REGULATOR
+B5
PT701
RL701
AC IN
F1
D701~704
Q701,D715
Regulator
+B2
+B3
Q702,D716
Regulator
-B1
-B2
D705,706
+B4
D751~754,761~764
Q751~754,D755
REGULATOR
PL801~806
D756
Q755,756,757
FL DRIVE
POWER
SUPPLY
Q758

• Signal line ➡ : Source signal ▪▪➡ : Surround speaker drive signal ⇨ : Center speaker drive signal


BA6138
IC801
METER DRIVE AMP
Q805,809 ,D836
Switching
+B1
Rect.
1/2 Square compresser
Out
1
4
(6)
2
(8)
3
(7)
5
9
+B3
VR809(VR808)
(METER ADJ.)
BA4558FDXT1
IC802
BUFFER AMP (METER)
-B1
+B3
5
(3)
4
8
7
(1)
6
(2)
D803
(D804)
D805
(D806)
M801(M802)
POWER
METER
M5218AP
IC301
HEADPHONES AMP
-B1
+B3
3
(5)
4
8
1
(7)
2
(6)
NF
HEADPHONES
D834
D833
D502
D501
MUTING DRIVE
Q201(Q202)
Q203
-B1
D832
RSN3502
IC501
POWER AMP
NF
14
(10)
13
(11)
8
2
3
-B1
+B2
-B2
Drive
Power
1
(4)
Short det.
Muting
Power on/off
Bias
7
9
6
SPEAKERS
6 ~ 8 Ω
+B4
Q354,
Q571~573
Over load detector
Q351~353,
361,362,371
FAN MOTOR
Fan motor drive
M
-B1
SURROUND SPEAKERS
L ch
R ch
4 ~ 8 Ω
NF
10
11
Drive
Power
4
Q551,553
MUTING DRIVE
-B1
Q552,554
MUTING DRIVE
-B1
8
2
3
-B1
+B2
-B2
Short det.
Muting
Power on/off
Bias
9
7
13
14
Drive
Power
1
6
NF
CENTER SPEAKERS
8 Ω
RSN3502
IC551
POWER AMP (CENTER / SURROUND)

## ■CABINET PARTS LOCATION


1
2
3
4
A
B
C
D
E
F
②
③
①
①
⑧
㉑
㉑
㉑
㉑
㉑
㉑
FC5
F702
FC6
FC4
CN701～
CN708
F701
FC3
④(E, EB, EG, GN) areas only.
⑤
CN712 (E, EG)areas only.
⑥
CN710 (EB, GN) areas only.
CN709 (E, EB, EG, GN) areas only.
①
①
FC1
F1
FC2
JK701
CN715
㉛(GC)area only.
㉗
㉓
㉔
㉔
㉔
㉔
Power Transformer (PT701)
㉓
JK502
JK501
㉕
⑩
㉓
㉓
㉓
CP715
CN703-1
CN703-2
㉕
㉕
JK201
CN502-3
CN502-2
JK351
CN502-1
㉓
CN501-1
CN501-2
CN501-3
(GC)area only.
㉜
㉜
JK702
㉝
㉝
F702
FC5
FC6
FC4
F701
FC3
FC7
F2
FC8
CN701～CN708
④
⑤
㉚
⑲
⑲
⑯
⑲
⑫
⑲
CP601
CN601
JK301
⑰
⑲
⑲
⑪
⑲
⑲
⑲
㉖
⑭
⑱
⑬
⑨
⑨
⑨
⑨
⑨
⑨
⑦-1
⑦
㉘
㉙
⑦-1
⑦-1
⑦-1
㉒
(E, EB, EG, GN) areas only.
⑳
⑳
⑮
⑮
⑳

# REPLACEMENT PARTS LIST

**Notes:** * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | CABINET AND CHASSIS | |
| | | | |
| 1 | RHD30007-K1 | SCREW | |
| 2 | RKM0202A-K | CABINET | |
| 3 | XTBS3+10JFZ1 | SCREW | |
| 4 | RWJ1808130XX | FLAT CABLE (8P) (W703) | (E, EB, EG, GN) |
| 4 | RWJ1808100XX | FLAT CABLE (8P) (W703) | (GC) |
| 5 | RJS1A5508 | CABLE HOLDER | |
| 6 | RMN0191 | P. C. B. HOLDER | |
| 7 | RFKJECA7-N | BOTTOM CHASSIS ASS'Y | (E, EB, EG, GN) |
| 7 | RFKJECH730GC | BOTTOM CHASSIS ASS'Y | (GC) |
| 7-1 | RKA0011-3 | FOOT | |
| 8 | RFKHECA10E-K | REAR GRILLE ASS'Y | (E, EG) |
| 8 | RFKHECA10EBK | REAR GRILLE ASS'Y | (EB, GN) |
| 8 | RFKHECA10GCK | REAR GRILLE ASS'Y | (GC) |
| 9 | SHE187-5 | P. C. B SUPPORT | |
| 10 | RMC0158 | TRANSISTOR HOLDER | |
| 11 | RWJ1812220QC | FLAT CABLE (12P) (W501) | |
| 12 | RWJ1809220QC | FLAT CABLE (9P) (W502) | |
| 13 | RFKGECA10E-K | FRONT PANEL ASS'Y | |
| 14 | RGL0320-Q | PANEL LIGHT | |
| 15 | RGW0205-S | TONE CONTROL KNOB | |
| 16 | RHD26016 | SCREW | |
| 17 | RMV0107 | REFLECTION PLATE | |
| 18 | RSE0007A | METER UNIT | |
| 19 | XTBS26+8J | SCREW | |
| 20 | XTBS3+8JFZ1 | SCREW | |
| 21 | XTB3+10JFZ | SCREW | |
| 22 | XTB3+12JFZ | SCREW | (E, EB, EG, GN) |
| 23 | XTB3+20JFZ | SCREW | |
| 24 | XTB3+8JFZ | SCREW | |
| 25 | XTW3+15T | SCREW | |
| 26 | RGU1357-1S | POWER BUTTON | |
| 27 | REM0057 | FAN MOTOR ASS'Y | |
| 28 | RGU1358-K | SUB BUTTON | |
| 29 | RME0208 | EARTH WIRE | |
| 30 | RMN0190-1 | P. C. B. HOLDER | (GC) |
| 31 | RMV0119 | BARRIER | (GC) |
| 32 | XTB3+12JFZ | SCREW | (GC) |
| 33 | XTB3+8JFZ | SCREW | (GC) |
| | | | |
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| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | INTEGRATED CIRCUIT(S) | |
| | | | |
| IC301 | M5218AP | HEADPHONES AMP | |
| IC501 | RSN3502 | POWER AMP (MAIN) | ⚠ |
| IC551 | RSN3502 | POWER AMP (SURROUND/CENTER) | ⚠ |
| IC601 | M5219FPTA | TONE AMP | |
| IC602 | MC14066BFEL | SIGNAL SELECTOR | (GC) |
| IC801 | BA6138 | METER DRIVE AMP | |
| IC802 | BA4558FDXT1 | BUFFER AMP | |
| IC803 | BU2090F-E2 | LED DRIVE | |
| | | | |
| | | TRANSISTOR(S) | |
| | | | |
| Q201, 202 | 2SD1450RTA | TRANSISTOR | |
| Q203 | UN4115 | TRANSISTOR | |
| Q351 | 2SA1309AIRTA | TRANSISTOR | |
| Q352 | 2SB621A-R | TRANSISTOR | |
| Q353 | 2SA1309AIRTA | TRANSISTOR | |
| Q354 | 2SC3311AIRTA | TRANSISTOR | |
| Q361 | 2SD2144S | TRANSISTOR | |
| Q362 | 2SA1309AIRTA | TRANSISTOR | |
| Q371 | 2SA1309AIRTA | TRANSISTOR | |
| Q551, 552 | UN4115 | TRANSISTOR | |
| Q553, 554 | 2SD1450RTA | TRANSISTOR | |
| Q571, 572 | 2SC3311AIRTA | TRANSISTOR | |
| Q573 | 2SA1309AIQTA | TRANSISTOR | |
| Q601, 602 | 2SC3312RSTA | TRANSISTOR | |
| Q606 | UN4211 | TRANSISTOR | (GC) |
| Q651, 652 | 2SD2144S | TRANSISTOR | |
| Q701 | 2SD2374PQAU | TRANSISTOR | ⚠ |
| Q702 | 2SB1548PQAU | TRANSISTOR | ⚠ |
| Q704 | 2SC3311AIRTA | TRANSISTOR | |
| Q751-754 | 2SD2137PQTA | TRANSISTOR | ⚠ |
| Q755, 756 | 2SD1450RTA | TRANSISTOR | |
| Q757, 758 | UN4111 | TRANSISTOR | |
| Q801 | 2SD1862QSTV6 | TRANSISTOR | ⚠ |
| Q802 | UN4111 | TRANSISTOR | |
| Q803 | UN4115 | TRANSISTOR | |
| Q804 | UN4115TA | TRANSISTOR | (GC) |
| Q805 | UN4211 | TRANSISTOR | |
| Q809 | UN4211 | TRANSISTOR | |
| | | | |
| | | DIODE(S) | |
| | | | |
| D351 | MA165 | DIODE | |
| D352 | MA4100LTA | DIODE | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| D361 | MA4075MTA | DIODE | |
| D362 | MA165 | DIODE | |
| D371 | MA700TA | DIODE | |
| D372 | MA165 | DIODE | |
| D501, 502 | MA165 | DIODE | |
| D601, 602 | MA4068HTA | DIODE | (GC)⚠ |
| D701-704 | 1N5402BF | DIODE | ⚠ |
| D705, 706 | RL1N4003N02 | DIODE | ⚠ |
| D712 | MA4240H | DIODE | |
| D715, 716 | MA4150M | DIODE | ⚠ |
| D717 | MA4051MTA | DIODE | ⚠ |
| D751-754 | RL1N4003N02 | DIODE | ⚠ |
| D755 | MA4082LTA | DIODE | ⚠ |
| D756 | MA165 | DIODE | |
| D761-764 | RL1N4003N02 | DIODE | ⚠ |
| D781, 782 | RL1N4003N02 | DIODE | ⚠ |
| D802 | MA4100MTA | DIODE | ⚠ |
| D803-806 | 1SS254TA | DIODE | |
| D807 | MA4100MTA | DIODE | ⚠ |
| D831-834 | 1SS254TA | DIODE | |
| D836 | MA4051-L | DIODE | |
| D837 | MA4056HTA | DIODE | ⚠ |
| D838, 839 | 1SS254TA | DIODE | |
| D841-844 | SLR-305VC | L. E. D. | |
| D861, 862 | MA700TA | DIODE | |
| D863, 864 | 1SS254TA | DIODE | |
| | | | |
| | | VARIABLE RESISTOR(S) | |
| | | | |
| VR601, 602 | EVJYV1F03G24 | TREBLE/BASS CONTROL | |
| VR808, 809 | EVNDXAA00B53 | POWER METER ADJ. | |
| | | | |
| | | COIL(S) | |
| | | | |
| L501, 502 | RLQYR73M | COIL | |
| L551, 552 | RLQYR73M | COIL | |
| L701 | RLQZ271M | COIL | (E, EB, EG, GN)⚠ |
| | | | |
| | | TRANSFORMER(S) | |
| | | | |
| PT701 | RTP2N5B003 | POWER TRANSFORMER | (E, EB, EG, GN)⚠ |
| PT701 | RTP1V5E004-W | POWER TRANSFORMER | (GC)⚠ |
| | | | |
| | | LAMP(S) | |
| | | | |
| PL801-806 | XAMR137 | LAMP | |
| | | | |
| | | FUSE(S) | |
| | | | |
| F1 | XBA2C16TB0 | FUSE, 250V T1.6A | (E, EB, EG, GN)⚠ |
| F1 | XBA2C31TB0 | FUSE, 250V T3.15A | (GC)⚠ |
| F2 | XBA2C16TB0 | FUSE, 250V T1.6A | (GC)⚠ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| F701, 702 | XBA2C16TB0 | FUSE, 250V T1.6A | ⚠ |
| | | | |
| | | SWITCH(ES) | |
| | | | |
| S701 | ESE37314 | VOLTAGE ADJ. | (GC)⚠ |
| S801 | EVQ21405R | POWER | |
| S802 | EVQ21405R | MODE | |
| S803 | EVQ21405R | TEST | |
| S804 | EVQ21405R | DELAY TIME | |
| S805 | EVQ21405R | CENTER MODE | |
| | | | |
| | | RELAY(S) | |
| | | | |
| RL701 | RSY0013M-0 | RELAY | ⚠ |
| | | | |
| | | CONNECTOR(S) AND SOCKET | |
| | | | |
| CN601 | RJU057W004 | SOCKET(4P) | |
| CN701-708 | RJS1A1101T1 | CONNECTOR(1P) | |
| CN709 | RJS1A1101T1 | CONNECTOR(1P) | (E, EB, EG, GN) |
| CN710 | RJS1A1101T1 | CONNECTOR(1P) | (EB, GN) |
| CN712 | RJS1A1101T1 | CONNECTOR(1P) | (E, EG) |
| CN715 | RJU057W004 | SOCKET(4P) | |
| CN501-1-3 | RJS1A6604 | CONNECTOR(4P) | |
| CN502-1-3 | RJS1A6603 | CONNECTOR(3P) | |
| CN703-1, 2 | RJS1A6604 | CONNECTOR(4P) | |
| CP601 | RJT057W004-1 | CONNECTOR(4P) | |
| CP715 | RJT057W004-1 | CONNECTOR(4P) | |
| JK201 | RJT065K20 | CONNECTOR(20P) | |
| JK351 | SJT3213 | CONNECTOR(2P) | |
| JK702 | SJS702-2 | CONNECTOR(7P) | (GC) |
| | | | |
| | | JACK(S) AND TERMINAL(S) | |
| | | | |
| JK301 | RJJ67TA02 | HEADPHONES | |
| JK501 | RJR0054 | SPEAKER(MAIN) | |
| JK502 | RJH2301MS | SPEAKER(CENTER/SURROUND) | |
| JK701 | SJS9236 | AC INLET | (E, EB, EG, GC)⚠ |
| JK701 | SJSD16-1 | AC INLET | (GN)⚠ |
| | | | |
| | | EARTH PLATE(S) | |
| | | | |
| E501 | SNE1004-2 | EARTH PLATE | |
| E701 | SNE1004-2 | EARTH PLATE | |
| | | | |
| | | FUSE HOLDER(S) | |
| | | | |
| FC1-6 | EYF52BC | FUSE HOLDER | |
| FC7, 8 | EYF52BC | FUSE HOLDER | (GC) |
| | | | |
| | | | |
| | | | |

# RESISTORS AND CAPACITORS

**Notes:**
- * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
- * Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| | | |
| | | RESISTORS |
| | | |
| R223, 224 | ERDS2TJ332 | 1/4W 3.3K |
| R251 | ERDS2TJ222 | 1/4W 2.2K |
| R253, 254 | ERDS2EJ121 | 1/4W 120 |
| R255 | ERDS2TJ154 | 1/4W 150K |
| R256 | ERDS2TJ105T | 1/4W 1M |
| R259 | ERDS2TJ561 | 1/4W 560 |
| R291, 292 | ERDS2TJ822 | 1/4W 8.2K |
| R301, 302 | ERDS2TJ222 | 1/4W 2.2K |
| R303, 304 | ERDS2TJ333 | 1/4W 33K |
| R305, 306 | ERDS2TJ223 | 1/4W 22K |
| R307, 308 | ERDS2TJ222 | 1/4W 2.2K |
| R309-312 | ERDS2EJ121 | 1/4W 120 |
| R351 | ERDS2TJ183T | 1/4W 18K |
| R352 | ERDS2TJ473 | 1/4W 47K |
| R353 | ERDS2TJ223 | 1/4W 22K |
| R354 | ERDS2TJ104 | 1/4W 100K |
| R355 | ERDS2TJ103 | 1/4W 10K |
| R357 | ERG1SJ100E | 1W 10 |
| R358 | ERG1SJ220E | 1W 22 |
| R359 | ERDS2TJ273 | 1/4W 27K |
| R360 | ERDS2TJ152 | 1/4W 1.5K |
| R361 | ERDS2TJ104 | 1/4W 100K |
| R362 | ERDS2TJ101 | 1/4W 100 |
| R363, 364 | ERDS2TJ103 | 1/4W 10K |
| R365 | ERDS2TJ335T | 1/4W 3.3M |
| R371 | ERDS2TJ683 | 1/4W 68K |
| R372 | ERDS2TJ561 | 1/4W 560 |
| R373 | ERDS2TJ101 | 1/4W 100 |
| R374 | ERDS2TJ472 | 1/4W 4.7K |
| R375 | ERDS2TJ103 | 1/4W 10K |
| R391 | ERDS2TJ473 | 1/4W 47K |
| R501, 502 | ERDS2TJ102 | 1/4W 1K |
| R503-506 | ERDS2TJ563 | 1/4W 56K |
| R507, 508 | ERDS2TJ102 | 1/4W 1K |
| R509, 510 | ERDS2TJ821 | 1/4W 820 |
| R511 | ERDS2TJ334 | 1/4W 330K |
| R512 | ERDS2TJ154 | 1/4W 150K |
| R513 | ERDS2TJ684 | 1/4W 680K |
| R514 | ERD25FJ470 | 1/4W 47 ⚠ |
| R515, 516 | ERDS1FVJ100T | 1/2W 10 ⚠ |
| R517, 518 | ERD25FVJ100T | 1/4W 10 ⚠ |
| R551, 552 | ERDS2TJ222 | 1/4W 2.2K |
| R553, 554 | ERDS2TJ102 | 1/4W 1K |
| R555, 556 | ERDS2TJ104 | 1/4W 100K |
| R557, 558 | ERDS2TJ563 | 1/4W 56K |
| R559, 560 | ERDS2TJ102 | 1/4W 1K |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R561 | ERDS2TJ151 | 1/4W 150 |
| R562 | ERDS2TJ471 | 1/4W 470 |
| R563, 564 | ERDS2TJ563 | 1/4W 56K |
| R565, 566 | ERD25FVJ100T | 1/4W 10 ⚠ |
| R567, 568 | ERDS1FVJ100T | 1/2W 10 ⚠ |
| R569 | ERDS2TJ823T | 1/4W 82K |
| R570 | ERDS2TJ124T | 1/4W 120K |
| R571 | ERDS2TJ823T | 1/4W 82K |
| R572 | ERDS2TJ124T | 1/4W 120K |
| R573 | ERDS2TJ563 | 1/4W 56K |
| R574 | ERDS2TJ564 | 1/4W 560K |
| R575 | ERDS2TJ223 | 1/4W 22K |
| R583, 584 | ERDS2TJ154 | 1/4W 150K |
| R585, 586 | ERDS2TJ105T | 1/4W 1M |
| R587, 588 | ERDS2EJ121 | 1/4W 120 |
| R589 | ERDS2TJ561 | 1/4W 560 |
| R590 | ERDS2TJ334 | 1/4W 330K |
| R591 | ERD2FCVG470T | 1/4W 47 ⚠ |
| R601, 602 | ERDS2TJ472 | 1/4W 4.7K |
| R603, 604 | ERDS2TJ473 | 1/4W 47K |
| R605, 606 | ERDS2TJ123 | 1/4W 12K |
| R607, 608 | ERDS2TJ222 | 1/4W 2.2K |
| R609, 610 | ERDS2TJ821 | 1/4W 820 |
| R611, 612 | ERDS2TJ122 | 1/4W 1.2K |
| R613, 614 | ERDS2TJ683 | 1/4W 68K |
| R615, 616 | ERDS2TJ123 | 1/4W 12K |
| R625, 626 | ERDS2TJ183T | 1/4W 18K |
| R627, 628 | ERDS2TJ123 | 1/4W 12K |
| R631-634 | ERDS2TJ104 | 1/4W 100K |
| R635, 636 | ERDS2TJ100 | 1/4W 10 E, EB, EG, GN |
| R635, 636 | ERDS2TJ223 | 1/4W 22K GC |
| R637, 638 | ERDS2TJ472 | 1/4W 4.7K |
| R639, 640 | ERDS2TJ100 | 1/4W 10 E, EB, EG, GN |
| R639, 640 | ERDS2TJ223 | 1/4W 22K GC |
| R641 | ERDS2TJ333 | 1/4W 33K GC |
| R643, 644 | ERDS2TJ332 | 1/4W 3.3K GC |
| R651, 652 | ERDS2TJ222 | 1/4W 2.2K |
| R653, 654 | ERDS2EJ121 | 1/4W 120 |
| R655 | ERDS2TJ561 | 1/4W 560 |
| R657, 658 | ERDS2TJ224T | 1/4W 220K |
| R701 | ERD2FCVJ4R7T | 1/4W 4.7 ⚠ |
| R702 | ERQ16NKW2R2E | 1/6W 2.2 ⚠ |
| R703, 704 | ERDS2TJ562 | 1/4W 5.6K |
| R705 | ERDS2TJ333 | 1/4W 33K |
| R706 | ERDS2TJ100 | 1/4W 10 |
| R709 | ERG1SJ331E | 1W 330 |
| R711 | ERG1SJ391E | 1W 390 |
| R713 | ERX1SJ6R8E | 1W 6.8 |
| R716 | ERDS2TJ392T | 1/4W 3.9K |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R717 | ERDS2TJ473 | 1/4W 47K |
| R731 | ERDS2TJ104 | 1/4W 100K |
| R752 | ERDS2TJ822 | 1/4W 8.2K |
| R761-764 | ERDS2TJ1R0 | 1/4W 1.0 |
| R765 | ERDS2TJ471 | 1/4W 470 |
| R766 | ERDS2TJ563 | 1/4W 56K |
| R777 | ERX1SJ6R8E | 1W 6.8 |
| R778, 779 | ERX1SJ5R6E | 1W 5.6 |
| R780 | ERDS2TJ822 | 1/4W 8.2K |
| R783 | ERDS2TJ221 | 1/4W 220 |
| R791, 792 | ERDS2TJ101 | 1/4W 100 |
| R801, 802 | ERDS2TJ272T | 1/4W 2.7K |
| R803, 804 | ERDS2TJ104 | 1/4W 100K |
| R805, 806 | ERDS2TJ155 | 1/4W 1.5M |
| R807, 808 | ERDS2TJ331 | 1/4W 330 |
| R811, 812 | ERDS2TJ821 | 1/4W 820 |
| R816 | ERDS2TJ104 | 1/4W 100K |
| R817, 818 | ERDS2TJ221 | 1/4W 220 |
| R819 | ERDS2TJ104 | 1/4W 100K |
| R821, 822 | ERDS2TJ123 | 1/4W 12K |
| R823, 824 | ERDS2TJ154 | 1/4W 150K |
| R825, 826 | ERDS2TJ223 | 1/4W 22K |
| R827, 828 | ERDS2TJ102 | 1/4W 1K |
| R829 | ERDS2TJ222 | 1/4W 2.2K |
| R831 | ERDS2TJ821 | 1/4W 820 |
| R832 | ERDS2TJ102 | 1/4W 1K |
| R833 | ERDS2TJ122 | 1/4W 1.2K |
| R834 | ERDS2TJ152 | 1/4W 1.5K |
| R836, 837 | ERDS2TJ472 | 1/4W 4.7K |
| R838 | ERDS2TJ332 | 1/4W 3.3K |
| R841, 842 | ERDS2TJ332 | 1/4W 3.3K |
| R843 | ERDS2TJ102 | 1/4W 1K |
| R844 | ERDS2TJ332 | 1/4W 3.3K GC |
| R845, 846 | ERDS2TJ102 | 1/4W 1K |
| R847 | ERDS2TJ221 | 1/4W 220 |
| R848 | ERDS2TJ104 | 1/4W 100K |
| R849, 850 | ERDS2TJ102 | 1/4W 1K |
| R851 | ERDS2TJ331 | 1/4W 330 |
| R852 | ERDS2TJ391 | 1/4W 390 |
| R853 | ERDS2TJ392T | 1/4W 3.9K |
| R855, 856 | ERDS2TJ393 | 1/4W 39K |
| R857, 858 | ERDS2TJ331 | 1/4W 330 |
| R861, 862 | ERDS2TJ681 | 1/4W 680 |
| R863 | ERDS2TJ222 | 1/4W 2.2K |
| R864, 865 | ERDS2TJ221 | 1/4W 220 |
| R870 | ERDS2TJ222 | 1/4W 2.2K |
| R871, 872 | ERDS2TJ272T | 1/4W 2.7K |
| R879 | ERDS2TJ221 | 1/4W 220 |
| R885, 886 | ERDS2EJ121 | 1/4W 120 |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| R887, 888 | ERDS2TJ152 | 1/4W 1.5K |
| | | |
| | | CAPACITORS |
| | | |
| C251 | RCE0JKA221BV | 6.3V 220U |
| C301, 302 | RCE1CKA100BG | 16V 10U |
| C303-306 | ECBT1H101KB5 | 50V 100P |
| C307, 308 | RCE1CKA220BG | 16V 22U |
| C309, 310 | RCE1HKA3R3BG | 50V 3.3U |
| C353 | ECEA1HKA2R2B | 50V 2.2U |
| C361 | ECEA1AKA221B | 10V 220U |
| C362, 363 | RCE1CKA100BG | 16V 10U |
| C364 | ECBT1E103ZF | 25V 0.01U |
| C371 | RCE0JKA101BV | 6.3V 100U |
| C372 | ECBT1E103ZF | 25V 0.01U |
| C381, 382 | ECBT1E103ZF | 25V 0.01U |
| C397, 398 | ECBT1E103ZF | 25V 0.01U |
| C501, 502 | ECA1HAP3R3B | 50V 3.3U |
| C503, 504 | ECBT1C152KR5 | 16V 1500P |
| C505, 506 | ECBT1H150J5 | 50V 15P |
| C507, 508 | ECBT1C682KR5 | 16V 6800P |
| C509, 510 | RCE1CKA220BG | 16V 22U |
| C511, 512 | ECBT1C122KR5 | 16V 1200P |
| C513 | ECA1VM101B | 35V 100U |
| C514 | ECA2AAP100B | 100V 10U |
| C515, 516 | ECFR1H104ZF | 50V 0.1U |
| C551, 552 | ECBT1H101KB5 | 50V 100P |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C553, 554 | RCE1HKA3R3BG | 50V 3.3U |
| C555, 556 | ECBT1H331KB5 | 50V 330P |
| C557, 558 | ECBT1C122KR5 | 16V 1200P |
| C561, 562 | ECBT1H150J5 | 50V 15P |
| C563, 564 | RCE1HKA4R7BG | 50V 4.7U |
| C565, 566 | ECFR1H104ZF | 50V 0.1U |
| C567, 568 | RCE0JKA470BG | 6.3V 47U |
| C569 | ECA2AAP100B | 100V 10U |
| C571 | RCE0JKA101BV | 6.3V 100U |
| C572 | ECBT1E223ZF | 25V 0.022U |
| C601, 602 | RCE1HKA3R3BG | 50V 3.3U |
| C603-606 | ECBT1H101KB5 | 50V 100P |
| C607, 608 | ECBT1H151KB5 | 50V 150P |
| C609, 610 | ECBT1E103ZF | 25V 0.01U |
| C611, 612 | RCE1HKA3R3BG | 50V 3.3U |
| C613, 614 | RCE1CKA100BG | 16V 10U |
| C615, 616 | ECEA1HKA010B | 50V 1U |
| C617, 618 | ECQV1H823JM3 | 50V 0.082U |
| C623, 624 | ECBT1E103ZF | 25V 0.01U GC |
| C626 | ECBT1E103ZF | 25V 0.01U GC |
| C631, 632 | RCE1HKA3R3BG | 50V 3.3U |
| C633, 634 | ECBT1C822KS5 | 16V 8200P |
| C653 | RCE1CKA101BV | 16V 100U |
| C701, 702 | ECES1H682VNG | 50V 6800U ⚠ |
| C703, 704 | ECEA1CKA330B | 16V 33U |
| C705, 706 | ECKR1H103ZF5 | 50V 0.01U |
| C707 | ECA1HM470B | 50V 47U ⚠ |

| Ref. No. | Part No. | Values & Remarks |
|---|---|---|
| C710 | ECBT1E103ZF | 25V 0.01U |
| C711 | ECQE1104KF3 | 100V 0.1U |
| C712 | ECBT1E223ZF | 25V 0.022U |
| C714 | ECKR1H103ZF5 | 50V 0.01U |
| C715 | ECA1VHG471B | 35V 470U |
| C731 | ECEA1HKN010B | 50V 1U |
| C761 | ECA1EM102B | 25V 1000U ⚠ |
| C762 | ECBT1E103ZF | 25V 0.01U |
| C781 | ECA1EM101B | 25V 100U ⚠ |
| C799 | ECBT1H104ZF5 | 50V 0.1U |
| C801, 802 | ECEA1EKN3R3B | 25V 3.3U |
| C803, 804 | ECEA1HKA2R2B | 50V 2.2U |
| C805 | RCE1HKA4R7BG | 50V 4.7U |
| C806 | RCE0JKA221BV | 6.3V 220U |
| C808, 809 | ECBT1E223ZF | 25V 0.022U |
| C810 | RCE1HKA4R7BG | 50V 4.7U |
| C831 | RCE1CKA100BG | 16V 10U |
| C832 | ECBT1E103ZF | 25V 0.01U |
| C833 | ECBT1H104ZF5 | 50V 0.1U |
| C834, 835 | ECBT1H471KB5 | 50V 470P |
| C836, 837 | RCE1HKA3R3BG | 50V 3.3U |
| C855, 856 | ECBT1C682KR5 | 16V 6800P |
| C905, 906 | ECBT1H101KB5 | 50V 100P |
| C1101, 1102 | ECBT1H473ZF5 | 50V 0.047U |
| C1103-1106 | ECBT1H102KB5 | 50V 1000P |
| C1107, 1108 | ECBT1H473ZF5 | 50V 0.047U |
| C1109-1111 | ECBT1H102KB5 | 50V 1000P |

## REPLACEMENT PARTS LIST

**Notes:**
- * Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
  Parts without these indications can be used for all areas.
- * Remote Control Ass'y: Supply period for three years from termination of production.
- * The "(SF)" mark denotes the standard part.

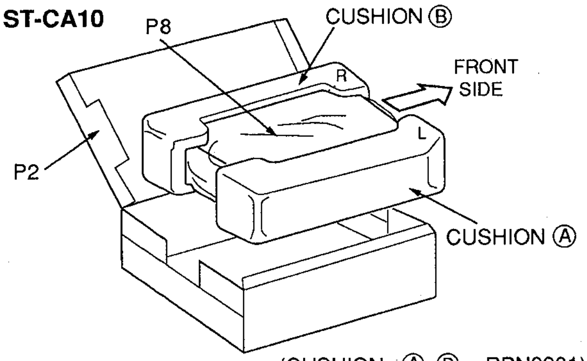
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | PACKING MATERIAL | |
| | | | |
| P1 | RPG2819 | PACKING CASE(SYSTEM) | (E, EG) |
| P1 | RPG2776 | PACKING CASE(SYSTEM) | (EB) |
| P1 | RPG2820 | PACKING CASE(SYSTEM) | (GC) |
| P1 | RPG2822 | PACKING CASE(SYSTEM) | (GN) |
| P2 | RPG2706 | PACKING CASE(AMPLIFIER) | |
| P2 | RPG2708 | PACKING CASE(TUNER) | |
| P2 | RPG2777 | PACKING CASE(CD) | |
| P2 | RPG2707 | PACKING CASE(DECK) | |
| P3 | RPN0949 | CUSHION(AMPLIFIER) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| P3 | RPN0961 | CUSHION(TUNER) | |
| P3 | RPN0951 | CUSHION(CD) | |
| P3 | RPN0950 | CUSHION(DECK) | |
| P4 | RPQ0164 | PAD | |
| P5 | RPF0134 | PROTECTION BAG(F. B.) | |
| P6 | SQZD3 | AREA LABEL | (E) |
| P6 | SQZD7 | AREA LABEL | (EB) |
| P6 | SQZD6 | AREA LABEL | (EG) |
| P6 | RQLA0066 | AREA LABEL | (GC) |
| P6 | RQLA0067 | AREA LABEL | (GN) |
| P7 | RPQ0541 | SPACER | |
| P8 | SPP740 | PROTECTION BAG(UNIT) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | ACCESSORIES | |
| | | | |
| A1 | RAK-CH744WH | REMOTE CONTROL TRANSMITTER | (E, EG) |
| A1 | RAK-CH745WH | REMOTE CONTORL TRANSMITTER | (EB, GC, GN) |
| A1-1 | RKK0020-K | BATTERT COVER FOR R.C.T. | |
| A2 | REE0393 | SPEAKER CORDS | |
| A3 | REX0608 | FLAT CABLE(SHORT)(20P) | |
| A4 | REX0660 | FLAT CABLE(MIDDLE)(19P) | |
| A5 | REX0661 | FLAT CABLE(LONG)(15P) | |
| A6 | RJA0019-2K | AC POWER SUPPLY CORD | (E, EG, GC)⚠(SF) |
| A6 | RJA0049-K | AC POWER SUPPLY CORD | (EB)⚠ |
| A6 | RJA0036-K | AC POWER SUPPLY CORD | (GN)⚠ |
| A7 | RQA0117 | WARRANTY CARD | (E, EB, EG) |
| A7 | RQX7433ZA | WARRANTY CARD | (GN) |
| A8 | RQCB0169 | SERVICENTER LIST | |
| A9 | RFKSECA10E-K | INSTRUCTION MANUAL ASS'Y | (E) |
| A9 | RFKSECA10EBK | INSTRUCTION MANUAL ASS'Y | (EB) |
| A9 | RQT3264-D | INSTRUCTION MANUAL | (EG) |
| A9 | RQT3265-G | INSTRUCTION MANUAL | (GC) |
| A9 | RQT3266-B | INSTRUCTION MANUAL | (GN) |
| A10 | RSA0007 | FM INDOOR ANTENNA | (E, EB, EG) |
| A10 | RSA0006 | FM INDOOR ANTENNA | (GC, GN) |
| A11 | RSA0012 | AM(LW/MW)LOOP ANTENNA | |
| A11-1 | RMN0244 | ANTENNA HOLDER | |
| A11-2 | XTN3+12AFZ | MOUNTING SCREW | |
| A12 | SJP9009 | ATTACHMENT PLUG | (EB)⚠ |
| A13 | RQLA0134 | VOLTAGE CAUTION LABEL | (GC) |
| A14 | SJP5213-1 | POWER PLUG ADAPTOR | (GC)⚠ |
| | | | |
| | | <GREASE OR JIG/TOOL> | |
| | | GREASE | |
| | | | |
| SA1 | RFKX0002 | COMPOUND GREASE | |

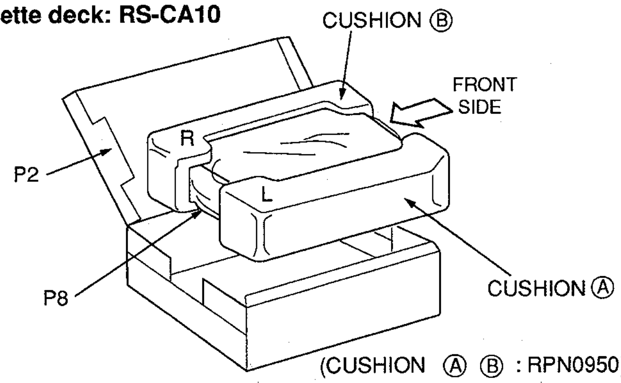
# PACKAGING

**Tuner: ST-CA10**


P8
CUSHION Ⓑ
R
FRONT SIDE
L
P2
CUSHION Ⓐ

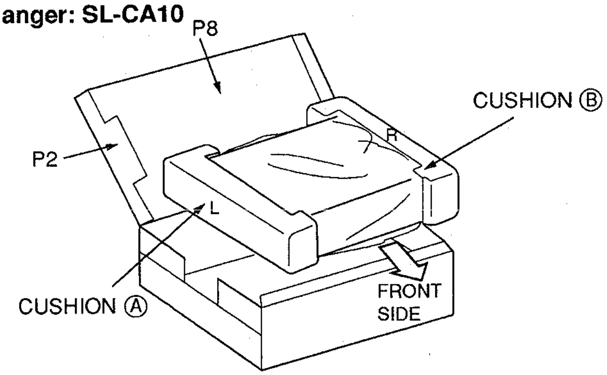
(CUSHION Ⓐ Ⓑ : RPN0961)

**Cassette deck: RS-CA10**


CUSHION Ⓑ
FRONT SIDE
R
P2
L
P8
CUSHION Ⓐ

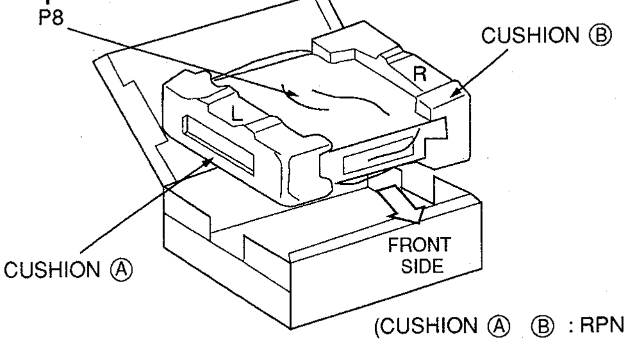
(CUSHION Ⓐ Ⓑ : RPN0950)

**CD Changer: SL-CA10**


P8
CUSHION Ⓑ
P2
R
L
CUSHION Ⓐ
FRONT SIDE

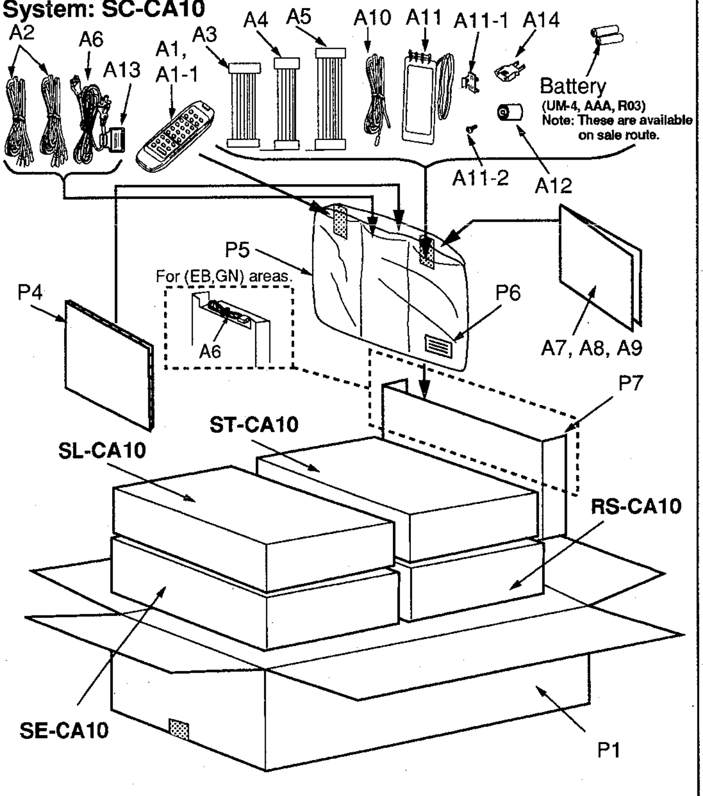
(CUSHION Ⓐ Ⓑ : RPN0951)

**Amplifier: SE-CA10**


P8
CUSHION Ⓑ
R
L
CUSHION Ⓐ
FRONT SIDE

(CUSHION Ⓐ Ⓑ : RPN0949)

**System: SC-CA10**


A2
A6
A13
A1, A1-1
A3
A4
A5
A10
A11
A11-1
A14
Battery
(UM-4, AAA, R03)
Note: These are available on sale route.
A11-2
A12
P5
For (EB,GN) areas.
A6
P4
P6
A7, A8, A9
P7
ST-CA10
SL-CA10
RS-CA10
SE-CA10
P1